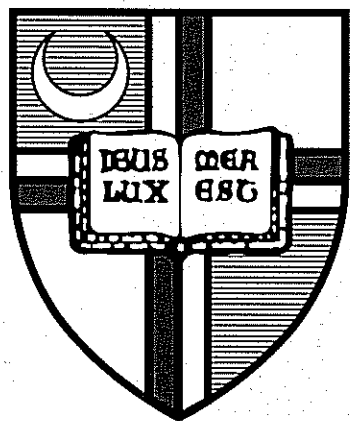


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Rehabilitating Nature: A Comparative Review of Legal Mechanisms
That Encourage Wetland Restoration Efforts

Royal C. Gardner

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REHABILITATING NATURE: A COMPARATIVE REVIEW OF LEGAL MECHANISMS THAT ENCOURAGE WETLAND RESTORATION EFFORTS

*Royal C. Gardner**

In many parts of the world, people have long drained, filled, and otherwise destroyed vast areas of wetlands.¹ It is estimated that two-thirds of all European wetlands have been eliminated since 1900.² In

* Associate Dean and Professor of Law, Stetson University College of Law, Gulfport, Florida. Member, National Research Council Committee on Mitigating Wetland Losses, 1999-2001. Vice-Chair, United States National Ramsar Committee, 2001-2003. © Royal C. Gardner. All rights reserved.

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1. The term "wetland" is defined in various ways. For example, the National Research Council, the principal operating agency of the United States National Academy of Sciences, defines wetland as "an ecosystem that depends on constant or recurrent, shallow inundation or saturation at or near the surface of the substrate." NATIONAL RESEARCH COUNCIL, WETLANDS: CHARACTERISTICS AND BOUNDARIES 64 (1995). Canada's National Wetlands Working Group states that a wetland is "[l]and that is saturated with water long enough to promote wetland or aquatic processes as indicated by poorly drained soils, hydrophytic vegetation and various kinds of biological activity which are adapted to a wet environment." NORTH AMERICAN WETLANDS CONSERVATION COUNCIL (CANADA) (NAWCC(C)), WETLAND MITIGATION IN CANADA 86 (2000). Perhaps the broadest definition is found in the Convention on Wetlands of International Importance Especially as Waterfowl Habitat: "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres." Convention on Wetlands of International Importance Especially as Waterfowl Habitat (RAMSAR) 1971, art. 1.1, 11 I.L.M. 97 (entered into force Dec. 21, 1975). The Convention further states that wetlands "may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six metres at low tide lying within the wetlands." *Id.* at art. 2.1. Accordingly, the Ramsar definition recognizes five principal wetland systems: "marine (coastal wetlands including coastal lagoons, rocky shores and coral reefs); estuarine (including deltas, tidal marshes and mangrove swamps); lacustrine (wetlands associated with lakes); riverine (wetlands along rivers and streams); and palustrine (meaning 'marshy' - marshes, swamps and bogs)." RAMSAR CONVENTION BUREAU, RAMSAR CONVENTION MANUAL 2 (2d ed. 1997). For the purpose of this Article, I will rely on the broadest definition of wetlands.

2. See Commission of the European Communities, Commission Communication to the Council and the European Parliament: Wise Use and Conservation of Wetlands, COM (95) 189, at 6.

Indonesia, more than ninety percent of Java and Bali's historic wetland base has been lost or converted to agriculture or aquaculture.³ Similar declines in wetland area have been reported in parts of North America, such as California and the midwestern states,⁴ and near major Canadian cities.⁵ Many of the remaining wetlands exist in degraded conditions.⁶

More recently, people have begun to appreciate the environmental and economic value of healthy wetlands.⁷ Some governments have responded by articulating "no net loss" policies and calling for a reversal of the trend of wetland losses.⁸ The restoration of wetlands is an instrumental component of these policies. Even countries that have not

3. See Thomas L. Crisman & William J. Streever, *The Legacy and Future of Tropical Limnology*, in *PERSPECTIVES IN TROPICAL LIMNOLOGY* 35-36 (F. Schiemer & K.T. Boland eds., 1996). Much of the loss may be attributed to the conversion of a natural wetland to rice production. See *id.* at 37.

4. Thomas E. Dahl, *Wetland Losses in the United States 1780's to 1980's* (1990) (California: 91% loss; Illinois: 85% loss; Indiana: 87% loss; Iowa: 89% loss; Missouri: 87% loss; and Ohio: 90% loss), available at <http://www.npwrc.usgs.gov/resource/othrdata/wetloss.htm> (last visited Nov. 14, 2002).

5. See CLAYTON RUBEC, *USING THE INCOME TAX ACT OF CANADA TO PROMOTE BIODIVERSITY AND SENSITIVE LANDS CONSERVATION* 7 (OECD 1999) (observing that "[w]etland loss in the vicinity of major Canadian cities is as high as 80 to 98 per cent").

6. See *Wise Use and Conservation of Wetlands*, *supra* note 2, at 6-8.

7. For a discussion of wetland functions and values, see NATIONAL RESEARCH COUNCIL, *COMPENSATING FOR WETLAND LOSSES UNDER THE CLEAN WATER ACT* 12 (2001) [hereinafter NRC, *COMPENSATING FOR WETLAND LOSSES*]; *Wise Use and Conservation of Wetlands*, *supra* note 2, at 4-6; RAMSAR CONVENTION BUREAU, *supra* note 1, at 3-4.

8. Canada: The Canadian Federal Government Policy on Wetland Conservation (adopting a goal of no net loss of wetland functions on all federal lands and waters), available at http://www.ramsar.org/wurc_policy_canada.htm (last visited Nov. 14, 2002); NORTH AMERICAN WETLANDS CONSERVATION COUNCIL (CANADA), *NO NET LOSS: IMPLEMENTING "NO NET LOSS" GOALS TO CONSERVE WETLANDS IN CANADA* (1992); European Union: *Wise Use and Conservation of Wetlands*, *supra* note 2, at 43-44 (stating objectives of no further wetland loss and no further wetland degradation); Trinidad and Tobago: National Policy and Programmes on Wetland Conservation for Trinidad and Tobago (2002) (stating that Objective 8 is to "commit all levels of government to a goal of no net loss of wetlands and their values and function, on publicly-owned lands and waters"), available at http://www.ramsar.org/wurc_policy_trinidad.htm (last visited Nov. 14, 2002); United States: Memorandum of Agreement Between the Environmental Protection Agency and the Department of the Army Concerning the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines, 55 Fed. Reg. 9210, 9211 (Mar. 12, 1990) [hereinafter U.S. Army & U.S. EPA, *Mitigation MOA*] (declaring a goal of no overall net loss of wetland functions and values within the Clean Water Act section 404 program); Notice of Availability of Clean Water Action Plan, 63 Fed. Reg. 14,109, 14,111 (Mar. 24, 1998) (setting "a goal of attaining a net increase of 100,000 wetland acres per year by the year 2005"); cf. WILLIAM M. LEWIS, JR., *WETLANDS EXPLAINED: WETLAND SCIENCE, POLICY, AND POLITICS IN AMERICA* 15-17 (2001) (noting the vagueness and flexibility of the phrase "no net loss").

adopted no net loss policies have incorporated restoration as an element of their national wetland strategies.⁹

Restoring a wetland means returning a wetland that has been disturbed or altered by human activity to a previously existing condition.¹⁰ Restoration may include "re-establishment" of wetlands,

9. Australia: The Wetlands Policy of the Commonwealth Government of Australia (1997) (stating that one goal "is to conserve, repair and manage wetlands wisely"), available at http://www.ramsar.org/wurc_policy_australia.htm (last visited Nov. 14, 2002); Colombia: Política Nacional Para Humedales Interiores de Colombia, *Estrategias Para Su Conservación y Uso Racional* (2001) (listing "[f]omentar la conservación, uso racional y rehabilitación de los humedales del país" as an objective), available at http://www.ramsar.org/wurc_policy_colombia_inland.htm (last visited Feb. 23, 2003); Costa Rica: Política de Humedales de Costa Rica (2001) (listing "[f]omentar la conservación y el uso racional de los ecosistemas de humedales mediante la acción coordinada del Gobierno y la sociedad civil" as the principal strategy), available at http://www.ramsar.org/wurc_policy_costarica.htm (last visited Nov. 14, 2002); Ghana: *Managing Ghana's Wetlands: A National Wetlands Conservation Strategy* (1999) (stating that the "Government will ensure the restoration of degraded wetland habitats as far as it is ecologically possible"), available at http://www.ramsar.org/wurc_policy_ghana.htm (last visited Nov. 14, 2002); New Zealand: *New Zealand Wetlands Management Policy* (1986) (stating that objectives are to "re-establish wetlands significant for the protection or enhancement of aesthetic, scenic, recreational and tourism values" and to "re-establish wetlands and their access ways which are important for fish"), available at http://www.ramsar.org/wurc_policy_newzealand.htm (last visited Nov. 14, 2002); Uganda: The Republic of Uganda, *National Policy for the Conservation and Management of Wetland Resources* (1995) (stating that a policy strategy is the "[r]ecovery of previously drained wetlands"), available at http://www.ugandawetlands.org/downloads/uganda_national_wetlands_policy_1995.pdf (last visited Nov. 14, 2002).

10. See NATIONAL RESEARCH COUNCIL (NRC), *RESTORATION OF AQUATIC ECOSYSTEMS: SCIENCE, TECHNOLOGY, AND PUBLIC POLICY* (1992), available at <http://www.nap.edu/openbook/0309045347/html> (last visited May 14, 2003); NORTH AMERICAN WETLANDS CONSERVATION COUNCIL (CANADA), *WETLAND MITIGATION AND COMPENSATION* 33 (1998) [hereinafter NAWCC(C), *MITIGATION AND COMPENSATION*]. There are many definitions of the term "restoration." See G.C. ZALIDIS ET AL., *RESTORATION OF MEDITERRANEAN WETLANDS* 17-18 (2002) (noting diversity of opinion about the definition of ecosystem restoration). In the United States, restoration is one type of compensatory mitigation. Typically, compensatory mitigation also includes creation, enhancement, and preservation actions. Creation refers to the "conversion of a persistent non-wetland area into a wetland area through some [human] activity" and "assumes that the site has not been a wetland within recent times (100 to 200 years)." NRC, *RESTORATION OF AQUATIC ECOSYSTEMS*, *supra*, at 33. Sometimes creation is also known as "establishment." See U.S. Army Corps of Engineers, *Regulatory Guidance Letter No. 02-2*, at 4 (Dec. 26, 2002) (defining establishment as "manipulation of the physical, chemical, or biological characteristics present to develop a wetland on an upland or deepwater site, where a wetland did not previously exist") [hereinafter USACE, *RGL No. 02-2*].

In contrast, enhancement involves work in an existing wetland. The definitions of enhancement and restoration can overlap; for example, a project to remove invasive species might be characterized as either an enhancement or restoration project. An enhancement project differs from restoration, however, because it may not necessarily return the site to a previous condition. Furthermore, while enhancement projects may

that is, restoration of a wetland on a site where a wetland once existed but no longer does.¹¹ Restoration may also include "rehabilitation" or the return of a currently degraded site, which is still technically a wetland, to its previous condition.¹² Wetland restoration may occur on a massive scale, such as the United States' efforts in the Florida Everglades¹³ and Denmark's actions to restore the Skjern Delta.¹⁴ It may also take place on a much smaller scale, such as an individual farmer restoring a prairie pothole.¹⁵ The benefits of the large-scale projects may be more obvious, but smaller wetlands can be essential for some ecosystems as well.¹⁶

It is also important to emphasize that wetland restoration is not always effective. Indeed, the literature suggests that although restoration of some types of wetland systems is possible, such efforts frequently fail to accomplish their objectives.¹⁷ Nevertheless, achieving the goal of no net

result in an increase in some wetland functions and/or values, it is recognized that others may suffer. See NAWCC(C), MITIGATION AND COMPENSATION, *supra*, at 33 (defining enhancement as increasing "one or more values of all or a portion of an existing wetland . . . often with the accompanying decline in other wetland values"); USACE, RGL No. 02-2, *supra*, at 4 (noting that enhancement "results in a change in wetland function(s) and can lead to a decline in other wetland functions"); see also Royal C. Gardner, *Banking on Entrepreneurs: Wetlands, Mitigation Banking, and Takings*, 81 IOWA L. REV. 527, 552 (1996) (discussing environmentalists' concerns with enhancement). Preservation typically does not involve manipulation of a site but instead "refers to the protection of an existing and well-functioning wetland from prospective future threats." NRC, COMPENSATING FOR WETLAND LOSSES, *supra* note 7, at 14. Preservation may be achieved through legal action, such as conservation easements, deed restrictions, and government designation of sites as nature reserves.

11. See USACE, RGL No. 02-2, *supra* note 10, at 4.

12. See *id.*

13. For contrasting views on the progress of this project, compare Ernie Barnett, *Everglades Restoration and Florida's Early Accomplishments*, 24 NAT'L WETLANDS NEWSL. (Envtl. L. Instit.), Jan.-Feb. 2002, at 5, with Shannon Estenoz, *A Glass of Everglades Water - Half Full and Half Empty*, 24 NAT'L WETLANDS NEWSL. (Envtl. L. Instit.), Mar.-Apr. 2002, at 7.

14. For a short description of the project, see Skjern Delta Restoration Project, at http://europa.eu.int/comm/life/cgi/life_search.pl?s=skjern&prog=NAT&nf=0&Search_by=text (last visited Jan. 20, 2002).

15. See, e.g., Delta Waterfowl's Adopt-A-Pothole Program, at <http://www.deltawaterfowl.org/programs/adopt.html> (last visited Nov. 15, 2002).

16. See, e.g., NRC, COMPENSATING FOR WETLAND LOSSES, *supra* note 7, at 52 (describing the ecological functions of small, isolated wetlands, such as Carolina bays). For information about the United States Forest Service's Carolina Bays Restoration Project, see <http://www.srs.fs.fed.us/charleston/wetlands.html>.

17. A recent report by the National Research Council highlights the problems associated with and the potential of restoration activities. See NRC, COMPENSATING FOR WETLAND LOSSES, *supra* note 7. One of the report's principal conclusions was that the "goal of no net loss of wetlands is not being met for wetland functions by the [Clean Water Act] mitigation program, despite progress in the last 20 years." *Id.* at 2. As a scientific

loss and reversing historic wetland losses must rely, to some degree, on restoration efforts.

This Article reviews the current legal mechanisms throughout the world that are designed to encourage wetland restoration activities. Part I examines international law that calls for wetland restoration.¹⁸ Part II explores non-regulatory programs that offer financial incentives for wetland restoration.¹⁹ In particular, direct payments to landowners and indirect payments through tax deductions and credits will be noted. Next, Part III explores domestic, non-cash incentives that are outside of traditional, permit-based regulatory programs.²⁰ Such incentives include the generation of good will or favorable publicity for corporations (or their desire to avoid unfavorable publicity), governmental permission to conduct harvesting activities that would otherwise be limited or prohibited, and governmental assurances not to impose stricter land-use controls if the restoration project results in environmental improvements. Finally, Part IV reviews several domestic regulatory programs and identifies incentives for wetland restoration.²¹ Often the incentive to restore a wetland is to receive a permit to fill or disturb other wetlands. In a complex regulatory system, mitigation banking may be allowed, thereby creating market-based incentives for wetland restoration.

Not every legal mechanism discussed will be a good fit for every country. Yet one may glean lessons that are transferable across boundaries. In particular, the more successful restoration incentive programs appear to consist of: (1) an educational component and public participation in the process; (2) clearly stated restoration goals and objectives; and (3) monitoring and enforcement capabilities. The minimum requirements for an effective restoration program include not

matter, some wetland types can be restored. See *id.* at 22-24. Others, however, such as vernal pools, fens, and bogs, are very difficult or impossible to restore. *Id.* at 22-27. As a practical matter, when a regulatory agency requires wetland mitigation (including restoration), the mitigation project may never be implemented. *Id.* at 101 (noting various studies revealing that "as much as 34% of the mitigation was never installed"). Even when mitigation projects are attempted, there may be little long-term compliance monitoring and enforcement by regulatory agencies. See *id.* at 122. The report, however, did emphasize that that wetland restoration ought to be chosen over creation "[w]henver possible." *Id.* at 5. The report further noted that third-party approaches to mitigation, such as mitigation banking, offered some advantages over mitigation provided by permittees. See *id.* at 9. To ensure the greater likelihood of the effectiveness of mitigation, the report recommended, inter alia, that restoration or other mitigation actions take place preferably before the permitted activity and that such mitigation projects be subject to long-term monitoring. See *id.* at 167.

18. See *infra* Part I.

19. See *infra* Part II.

20. See *infra* Part III.

21. See *infra* Part IV.

only incentives for participation, but an ability to ensure compliance as well.

I. RESTORATION INCENTIVES IN INTERNATIONAL LAW

Various multilateral and bilateral international legal documents encourage the restoration of wetlands. Some agreements, such as the Ramsar Convention²² and the Convention on Biological Diversity,²³ offer an ecosystem perspective. Other international instruments, such as the Convention on the Conservation of Migratory Species of Wild Animals,²⁴ known as the Bonn Convention, and the North American Waterfowl Management Plan,²⁵ focus more on a particular wetland function or value. In addition, a treaty that is not ostensibly related to wetlands may nevertheless create an incentive to restore wetlands. The United Nations Framework Convention on Climate Change²⁶ does not specifically mention wetlands, but because wetlands can provide a carbon sequestration function, restored wetlands may have a value in mitigating global warming trends. As is the case in much of international law, however, countries retain a great deal of discretion in how, or whether, to implement and support restoration projects.

A. The Ramsar Convention

The Ramsar Convention encourages the conservation and wise use of wetlands.²⁷ Contracting parties commit to designate at least one site for inclusion in the List of Wetlands of International Importance.²⁸ They

22. Convention on Wetlands of International Importance Especially as Waterfowl Habitat, *supra* note 1. Although the complete title of this Convention suggests a focus on waterfowl, over time the Convention "has broadened its scope to cover *all aspects* of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation and for the well-being of human communities." RAMSAR CONVENTION BUREAU, *supra* note 1, at 1.

23. Convention on Biological Diversity, June 5, 1992, 31 I.L.M. 818.

24. Convention on the Conservation of Migratory Species of Wild Animals, June 23, 1979, 19 I.L.M. 15 [hereinafter Bonn Convention].

25. U.S. Department of Interior & Environment Canada, *North American Waterfowl Management Plan: A Strategy for Cooperation* (1986) [hereinafter 1986 NAWMP]; U.S. Department of Interior & Environment Canada, *1994 Update to the North American Waterfowl Management Plan: Expanding the Commitment* [hereinafter 1994 NAWMP]; U.S. Department of Interior & Environment Canada, *1998 Update, Expanding the Vision, North American Waterfowl Management Plan* [hereinafter 1998 NAWMP].

26. Framework Convention on Climate Change, May 9, 1992, 31 I.L.M. 849.

27. See Ramsar Convention, *supra* note 1, at 971-72 (discussing wise use in Article 3 and stating that parties should promote conservation in Article 4).

28. *Id.* art. 2.4, at 970. The site should have "international significance in terms of ecology, botany, zoology, limnology or hydrology." *Id.* art. 2.2, at 970. Specific criteria for determining international significance are adopted by the Conference of the Parties, based

then must promote the conservation of listed wetlands. The contracting parties also agree to promote the wise use of other wetlands within their territories.²⁹ Restoration is a component of obligations relating to both listed and unlisted wetlands.

If a contracting party wishes to remove a wetland from the list or to reduce its boundaries, Article 4.2 of the Ramsar Convention states that the party "should as far as possible compensate for any loss of wetland resources."³⁰ While the Convention mentions the creation of "additional nature reserves for waterfowl" as a particular means of compensation,³¹ restoration of habitat could also satisfy the compensation requirement of Article 4.2.³²

The concept of wise use, which applies to both listed and other wetlands, also contemplates restoration actions. The Conference of the Parties defined wise use to mean "sustainable utilization for the benefit of humankind in a way compatible with the maintenance of the natural properties of the ecosystem."³³ Guidelines for wise use urge that parties promulgate national, regional, and local wetland policies; establish inventory, monitoring, research, training, and public education programs; and implement management plans at specific wetland sites.³⁴ As part of the wise use of wetlands, the Conference of the Parties in 1990 and 1996 recommended that its members consider implementing wetland restoration projects and that wetland restoration be incorporated into the

on the recommendations of the Scientific and Technical Review Panel. RAMSAR CONVENTION BUREAU, *supra* note 1, at 30-31. As of November 2002, 136 countries were contracting parties to the Ramsar Convention, and 1252 wetland sites were included on the Ramsar List. See Ramsar Conventions on Wetlands, at <http://www.ramsar.org> (last updated Feb. 28, 2002).

29. Ramsar Convention, *supra* note 1, art. 3.1, at 971.

30. *Id.* art. 4.2, at 971-72.

31. *Id.* art. 4.2, at 972.

32. In the United States, the term "compensation" or "compensatory mitigation" is now understood to include restoration, creation, enhancement, and preservation. See U.S. Army & U.S. EPA, Mitigation MOA, *supra* note 8, 55 Fed. Reg. at 9212 n.6. In 1971, when the Ramsar Convention was concluded, the term most likely referred only to preservation (*i.e.*, compensation was the designation of additional reserves). Nevertheless, a treaty may be interpreted in light of the parties' subsequent practices. See Vienna Convention on the Law of Treaties, May 23, 1969, art. 31.3(b), 8 I.L.M. 679, 692.

33. See Guidelines for the Implementation of the Wise Use Concept, Adopted as an Annex to Recommendation 4.10 (1990), available at http://www.ramsar.org/key_wiseuse.htm; see also Recommendation 3.3: Wise Use of Wetlands (June 5, 1987), available at http://www.ramsar.org/key_rec_3.3.htm.

34. See RAMSAR CONVENTION BUREAU, *supra* note 1, at 35. The Ramsar Bureau oversaw the Wise Use Project, which examined "experiments in the wise use of wetlands" at specific sites throughout the world. *Id.* at 42. Among the lessons learned from the project was that "restoration for wise use is expensive." *Id.* at 44.

missions of agencies responsible for wetlands.³⁵ Later action by the Conference of the Parties was even more specific, with Resolution VII.17 calling upon contracting parties to include restoration as an element of national planning.³⁶ Similarly, Resolution VII.24 encouraged contracting parties to integrate compensation of wetland losses, which includes restoration, into national planning and urged that “all practicable measures” be taken to compensate for human-induced wetland loss.³⁷ Most recently, the 2002 Conference of the Parties adopted Resolution VIII.16, which provides principles and guidelines for wetland restoration.³⁸ The resolution urges parties to integrate these principles and guidelines into their national policies.³⁹

Although the Ramsar Convention and recommendations and resolutions of the Conference of the Parties support the consideration of restoration actions, nothing in these documents legally obligates countries to do so. Even the Article 4.2 requirement to compensate for deleting or restricting the boundaries of listed wetlands – wetlands of international importance – uses the word “should” rather than “must.”⁴⁰ This compensation requirement is further watered down by the caveat “as far as possible.”⁴¹ The more specific recommendations and resolutions of the Conference of the Parties urge, encourage, persuade, and cajole. They plainly do not mandate; however, this is typical of conservation treaties.

Nonetheless, the Ramsar Convention has served as an incentive for wetland restoration in several ways. First, some countries have embarked on restoration projects to satisfy, in part, the duty of wise use imposed by the Ramsar Convention. For example, in its 1999 National

35. See Recommendations of the Montreaux Conference, Recommendation 4.1: Wetland Restoration (July 4, 1990), available at http://www.ramsar.org/key_rec_4.1.htm; Recommendations of the Brisbane Conference, Recommendation 6.15: Restoration of Wetlands (Mar. 27, 1996), available at http://www.ramsar.org/key_rec_6.15.htm.

36. Resolutions of the San Jose Conference, Resolution VII.17 on Wetland Restoration (May 18, 1999), available at http://www.ramsar.org/key_res_vii17e.htm.

37. Resolutions of the San Jose Conference, Resolution VII.24 on Compensation for Lost Wetland Habitats (May 18, 1999), available at http://www.ramsar.org/key_res_vii24e.htm.

38. Resolutions of the Valencia Conference, Resolution on Wetland Restoration (Nov. 26, 2002), available at http://www.ramsar.org/key_res_viii_16e.htm. The principles and guidelines emphasize the involvement of local stakeholders, the importance of clearly stated goals, objectives, and performance standards, and the need for long-term stewardship of sites. *Id.*

39. *Id.* The resolution calls upon the parties to report on their progress regarding the use of the restoration principles and guidelines at the next Conference of the Parties. *Id.*

40. Ramsar Convention, *supra* note 1, art. 4.2, at 971-72.

41. See *id.* at 971. Furthermore, Article 2.3 emphasizes that a site's inclusion on the list does not prejudice the sovereign rights of the contracting party. See *id.* art. 2.3, at 970.

Report, Denmark describes its ambitious restoration program, which seeks to restore 60,000 hectares of wetlands over twenty years.⁴² Second, the strategic plans that the Ramsar Convention calls on parties to develop have led to the implementation of restoration projects. The Ramsar Bureau's active role in the Mediterranean Wetlands Initiative (MedWet) is illustrative.⁴³ MedWet has produced a ten-year regional strategic plan, the objective of which is “[t]o stop and reverse the loss and degradation of Mediterranean wetlands.”⁴⁴ Restoration activities are an important part of achieving this objective.⁴⁵ The Ramsar Convention also provides financial incentives for wetland restoration through its Small Grants Program. Established in 1990, the program provides funds to developing countries and countries in economic transition.⁴⁶ Several of the projects have focused on restoration activities, notably in Armenia (Lake Sevan), Ghana (mangroves and coastal wetlands in the Lower Volta Delta), Moldova (wetlands downstream of the Dniester River), and the Slovak Republic (wetlands adjacent to the Morava River).⁴⁷

42. See National Report of Denmark for COP7, ¶ 2.1.a (1999) (describing Denmark's national wetland policies), available at http://www.ramsar.org/cop7_nr_denmark.htm. The National Report, which contracting parties must submit prior to the triennial Conference of the Parties, must specifically address restoration policies. For example, ¶ 2.11 of the 1999 National Reports for COP7 asked: “Is wetland restoration and rehabilitation considered a priority in your country? Yes/No. If Yes, describe the actions that have been taken to identify wetlands in need of these actions and to mobilise resources for restoration or rehabilitation.” *Id.* ¶ 2.11. Similarly, ¶ 2.6 of the 2002 National Reports for COP8 asked: “Has your country completed an assessment to identify its priority wetlands for restoration or rehabilitation?” It also asked: “Does your country have resource information on the restoration or rehabilitation of wetlands?” National Report of Denmark for COP8, available at http://www.ramsar.org/cop8_nrs_denmark.pdf.

43. See RAMSAR CONVENTION BUREAU, *supra* note 1, at 53-55; see also MedWet and the Mediterranean Wetlands Committee – Background and Basic Documents, available at http://www.ramsar.org/key_medcom_index.htm.

44. Mediterranean Wetland Strategy 1996-2006, ¶ 5, available at http://www.ramsar.org/key_medwet_strategy.htm.

45. See *id.* ¶ 9 (stating that one of the intentions of the Mediterranean Wetland Strategy is “to promote conservation of the biological diversity of Mediterranean wetlands, through sustainable management, restoration and rehabilitation”). Much of the funding for the MedWet initiative was provided by the European Union through LIFE, a financial instrument that supports biodiversity projects. See LIFE-III: The Financial Instrument for the Environment, available at <http://europa.eu.int/comm/environment/life/life/index.htm>. LIFE is discussed in more detail in Part II.

46. See RAMSAR CONVENTION BUREAU, *supra* note 1, at 55.

47. See Ramsar Small Grants Fund—Projects Funded from 1991-2000, available at http://www.ramsar.org/key_sgf_synoptic.htm (last visited Nov. 7, 2002).

B. The Convention on Biological Diversity

Similar to the Ramsar Convention, but on a broader scale, the Convention on Biological Diversity (CBD)⁴⁸ calls for the conservation of biological diversity and sustainable use of its components. Unlike the Ramsar Convention, however, the CBD expressly discusses restoration and rehabilitation of ecosystems in the text of the treaty. Nevertheless, the CBD merely encourages such activities; like the Ramsar Convention, it does not compel countries to restore wetlands.

As an initial matter, the CBD's definition of "biological diversity" clearly encompasses aquatic ecosystems such as wetlands.⁴⁹ The phrase "biological diversity" is defined as "the variability among living organisms from all sources including . . . marine and other aquatic ecosystems."⁵⁰ Biological diversity also refers to "diversity within species, between species, and of ecosystems."⁵¹

The CBD refers to restoration of ecosystems in several places. Article 8 of the CBD lists the duties of contracting parties regarding in-situ conservation.⁵² Particularly relevant here is Article 8(f), which provides that parties "shall, as far as possible and as appropriate . . . [r]ehabilitate and restore degraded ecosystems and promote the recovery of threatened species, *inter alia*, through the development and implementation of plans or other management strategies."⁵³ Article 8(h) may also be read as supporting a duty to restore wetlands, at least those that are degraded because of invasive exotic species.⁵⁴ Furthermore, Article 10(d) states that parties "shall, as far as possible and as appropriate . . . [s]upport local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced."⁵⁵ Remedial actions, with respect to degraded wetlands, would obviously include restoring the site to its previous condition.

Of course, while the parties "shall" undertake these actions, they only need do so "as far as possible and as appropriate."⁵⁶ Still, this soft duty has encouraged some countries to support wetland restoration activities. Parties must submit national reports and discuss measures taken to

48. Convention on Biological Diversity, *supra* note 23, art. 2, at 823.

49. *See id.*

50. *Id.*

51. *Id.*

52. *Id.* art. 8, at 825-26.

53. *Id.* art. 8, at 826.

54. *Id.*

55. *Id.* art. 10, at 827.

56. *Id.* art. 8, at 826; *id.* art. 10, at 827.

rehabilitate and restore degraded ecosystems.⁵⁷ Denmark's restoration programs, noted above, were developed partly in response to the CBD.⁵⁸ Other countries, such as Australia, have enacted CBD-related legislation that authorize wetland restoration projects.⁵⁹

C. The Bonn Convention and the North American Waterfowl Management Plan

The Bonn Convention seeks to conserve migratory species, including many wetland-dependent species.⁶⁰ Species are classified as having a favourable or unfavourable conservation status.⁶¹ With respect to endangered species (which are included in the unfavourable conservation status), Article III requires parties to "endeavor" to, "where feasible and appropriate, restore those habitats of the species which are of importance in removing the species from danger of extinction."⁶² Parties must also "endeavor" to compensate for "the adverse effects of activities . . . that seriously impede or prevent the migration" of endangered species.⁶³ A compensation action could include legal requirements that a developer restore wetland habitat of a species as a condition of receiving a development permit.

57. *Id.* art. 26, at 834. National Reports may be found at <http://www.biodiv.org/world/reports.asp>.

58. *See* National Report of Denmark, *supra* note 42, ¶ 2.1.c. (observing that Denmark's "national wetland policy is covered by an integrated and a comprehensive set of nature protection and environmental laws and strategies which also complies with Article 6 of the Convention on Biological Diversity").

59. Environment Protection and Biodiversity Conservation Act, 1999 (Austl.), available at <http://scaleplus.law.gov.au/html/pasteact/3/3295/top.htm> (last visited May 13, 2003). For example, the management plan for implementing Regulation 10.02 (Managing Wetlands of International Importance) provides that "[a] management plan for a declared Ramsar wetland should . . . state whether the wetland needs restoration or rehabilitation . . . [and] if restoration or rehabilitation is needed - explain how the plan provides for restoration or rehabilitation[.]" Environmental Protection and Biodiversity Conservation Regulations, 2000, sch. 6, §§ 2(f), (g) (Austl.), available at <http://scaleplus.law.gov.au/html/pastereg/3/1619/0/PR002870.htm> (last visited May 13, 2003). Australia provides an interesting case study where a national government has relatively weak authority over purely domestic environmental matters, but is able to expand its powers in this area through its foreign affairs authority. By assuming international obligations, such as the Ramsar Convention and the CBD, the national government of Australia is able to assert more authority over environmental matters than it would otherwise be permitted. *See* J. Finlay-Jones, *Aspects of Wetland Law and Policy in Australia*, 5 WETLANDS ECOLOGY & MANAGEMENT 37, 38-42 (1997).

60. *See* Bonn Convention, *supra* note 24, art. I, at 15-17.

61. *Id.* art. I, at 16-17.

62. *Id.* art. III, § 4, cl. a, at 18.

63. *Id.* art. III, § 4, cl. b, at 19.

The Bonn Convention also encourages wetland restoration for the habitat of species that are not yet endangered. Article IV suggests that parties enter into conservation agreements regarding Appendix II species, which either have an unfavourable conservation status or could benefit from additional protection.⁶⁴ These Article IV agreements should, when feasible, contain provisions regarding the restoration of habitat.⁶⁵ One such Article IV agreement, the African-Eurasian Waterbirds Agreement (AEWA), is designed to assist 172 wetland-dependent species.⁶⁶ Parties to this agreement shall identify sites for restoration and rehabilitation and “encourage the protection, management, rehabilitation and restoration of these sites.”⁶⁷

Another regional agreement (not under the rubric of the Bonn Convention) that focuses on wetland-dependent species is the North American Waterfowl Management Plan (NAWMP). Canada and the United States signed the NAWMP in 1986, and Mexico joined in 1994.⁶⁸ An objective of the NAWMP is to restore populations of duck, geese, and swans to their 1970s levels, and a primary means of doing so is habitat restoration.⁶⁹ At the international level, the NAWMP is administered by an eighteen-member North American Waterfowl Management Plan Committee, with each country appointing six members.⁷⁰ The Committee updates the NAWMP and reviews progress toward accomplishing its objectives, including habitat restoration.⁷¹ Funding for these projects is provided by the three national governments, state and local governments, non-governmental organizations, corporations, and individuals.⁷² These partners spent over \$1.5 billion

64. *Id.* art. IV, § 3, at 19.

65. *Id.* art. V, § 5, cl. e, at 20-21.

66. See Convention on Migratory Species African-Eurasian Waterbird Agreement (AEWA), available at http://www.wcmc.org.uk/cms/aew_bkrd.htm; see also http://www.wcmc.org.uk/cms_aew_text.htm (full text of agreement).

67. AEWA, *supra* note 66, art. III, cl. (2)(c). The agreement also imposes a duty to “endeavor to implement remedial measures, including habitat rehabilitation and restoration.” *Id.* art. III, cl. 2(e).

68. See 1994 NAWMP, *supra* note 25, at 2 (noting that Mexico is now a full partner).

69. 1986 NAWMP, *supra* note 25, at 13 (discussing habitat priorities and goals); 1994 NAWMP, *supra* note 25, at 20-23 (discussing habitat objectives); 1998 NAWMP, *supra* note 25, at 26 (listing joint venture objectives).

70. 1998 NAWMP, *supra* note 25, at 29 (discussing the international administration, including goals, updates, additions, and plans for review).

71. *Id.*

72. *Id.* at 31 (illustrating the differences between the participating countries and the delegation of duties by each country).

between 1986 and 1997 to implement the NAWMP⁷³ and “have worked to conserve over 5 million acres of wetland ecosystems.”⁷⁴ A significant part of the conservation efforts include restoration of wetlands. For example, the 1998 NAWMP update establishes an objective of restoring over 5.5 million acres of waterfowl habitat.⁷⁵ Part II will examine in more detail the use of financial incentives to motivate private owners of wetlands to participate in restoration actions to implement the NAWMP.

D. The United Nations Framework Convention on Climate Change and the Kyoto Protocol

In contrast to agreements that focus on traditional wetland functions and values, such as waterfowl habitat and recreational and aesthetic values, the Framework Convention on Climate Change (FCCC) suggests a “new set of ecological functions and values” that may encourage wetland restoration: wetlands may serve as a carbon sink and offset greenhouse gas emissions.⁷⁶ The FCCC’s objective is to stabilize atmospheric concentrations of greenhouse gases “at a level that would prevent dangerous anthropogenic interference with the climate system.”⁷⁷ The FCCC imposes only a soft commitment on developed country parties to aim to “return[] individually or jointly to their 1990 levels . . . [of] emissions of carbon dioxide and other greenhouse gases.”⁷⁸

The Kyoto Protocol, which was concluded in 1997, added more specificity to developed country commitments.⁷⁹ Many European countries agreed to reduce net greenhouse gas emissions eight percent below 1990 levels.⁸⁰ The United States agreed to a seven percent reduction, while Canada and Japan accepted six percent cuts.⁸¹ Net emissions are calculated by determining the amount of greenhouse gases emitted by anthropogenic sources, minus the amount of greenhouse gases removed by “sinks.”⁸² A sink is a human-induced process, activity,

73. *Id.* at 2 (outlining the intent to “secure, protect, restore, enhance, and manage wetlands . . . to conduct research . . . and to provide environmental education and conservation planning with community involvement”).

74. *Id.* at vii.

75. *Id.* at 26.

76. JIM PATTERSON, WETLANDS AND CLIMATE CHANGE PHASE I, FEASIBILITY INVESTIGATION ON THE POTENTIAL FOR CREDITING WETLAND CONSERVATION AS CARBON SINKS 3 (1999).

77. See Framework Convention on Climate Change, *supra* note 26, art. 2, at 854.

78. See *id.* art. 4(2)(b), at 857.

79. Conference of the Parties to the Framework Convention on Climate Change: Kyoto Protocol, Dec. 10, 1997, 37 I.L.M. 22 (1998) [hereinafter Kyoto Protocol].

80. *Id.* annex B, at 43.

81. *Id.*

82. *Id.* art. 3.3, at 33.

or mechanism that removes greenhouse gases from the atmosphere and includes "land-use change and forestry activities."⁸³

Much of the post-Kyoto debate concerning sinks has focused on the role of afforestation, reforestation, and deforestation,⁸⁴ including forested wetlands.⁸⁵ Some restored wetlands may serve as sinks.⁸⁶ The World Conservation Union reports that "[r]estoration [of wetlands] . . . can . . . provide opportunities to store carbon."⁸⁷ The extent, however, to which a wetland contributes to carbon sequestration is the subject of ongoing research and depends on the type and characteristics of the wetland.⁸⁸ Nevertheless, the carbon sequestration potential of wetlands offers an additional reason for their restoration. This incentive could even encourage developed countries to undertake restoration projects in other nations. Under Joint Implementation and the Clean Development Mechanism, a country may receive credit toward its reduction of greenhouse gas emissions for wetland restoration work that it promotes in other countries.⁸⁹

Yet carbon sequestration is not likely to become a primary motive for wetland restoration projects for several reasons. First, there is currently no agreed methodology for measuring the carbon sequestration contribution of a restored wetland.⁹⁰ Second, wetland restoration can be

83. *Id.* Sink is defined in the Climate Change Convention. See Framework Convention on Climate Change, *supra* note 26, at 854.

84. See DAVID HUNTER ET AL., INTERNATIONAL ENVIRONMENTAL LAW AND POLICY 645-48 (2d ed. 2002).

85. See Resolutions of the Valencia Conference, Resolution on Climate Change and Wetlands (Nov. 26, 2002) (noting that the Intergovernmental Panel on Climate Change's Report on Land Use, Land Use Change and Forestry includes forested wetlands), available at http://www.ramsar.org/key_res_viii_03_e.htm.

86. PATTERSON, *supra* note 76, at 16-18. Other wetlands, however, may serve as a source of greenhouse gas emissions. *Id.* (contrasting peatlands, which generally serve as sinks, and rice paddies, which are significant sources of methane).

87. GER BERGKAMP & BRETT ORLANDO, WETLANDS AND CLIMATE CHANGE: EXPLORING COLLABORATION BETWEEN THE CONVENTION ON WETLANDS (RAMSAR, IRAN 1971) AND THE UN FRAMEWORK CONVENTION ON CLIMATE CHANGE 11 (1999), at www.iucn.org/themes/climate/wetlandsc.pdf.

88. PATTERSON, *supra* note 76, at 18 ("The wide range of wetland types and their different characteristics for different greenhouse gases make it challenging to determine each wetland's role. Much research on the magnitude of sources and sinks and the processes controlling them needs to be undertaken.")

89. See Kyoto Protocol, *supra* note 79 art. 6, at 35. The Joint Implementation allows for emissions trading between Annex I parties, which include developed countries and countries in economic transition. *Id.* The Clean Development Mechanism allows for emissions trading between Annex I parties and developing countries, known as non-Annex I parties. See *id.* art. 12, at 38; see also Richard B. Stewart et al., *Designing an International Greenhouse Gas Emissions Trading System*, 15 NAT. RES. & ENV'T 160 (2001).

90. PATTERSON, *supra* note 76 at 16-18.

an expensive means of carbon sequestration; other, cheaper sinks, such as reforestation of uplands, are available. Moreover, the uncertainty of whether wetland restoration projects will be effective undercuts their attractiveness as tools for mitigating climate change. Although the carbon sequestration potential of wetlands may not be the most compelling reason to embark on a restoration project, such a benefit does provide a subsidiary reason to support such actions.⁹¹

II. NON-REGULATORY FINANCIAL INCENTIVES TO RESTORE WETLANDS

An international agreement may prompt a national government to fund wetland restoration projects on lands it owns or controls. Some areas that are potential restoration sites, however, are owned or controlled by regional or local governments, which may lack the financial resources to undertake the work. In such cases, the national government may agree to a cost-sharing arrangement, in which it pays for much of the work. Examples of this approach in the United States include the Everglades restoration project,⁹² coordinated federal-state efforts to restore Louisiana's coastal wetlands,⁹³ and the restoration of California's Bolinas Lagoon ecosystem, which is the most recently designated United States Ramsar site.⁹⁴

91. *Id.* at 33 ("In many cases, the economic value of carbon sequestration would not justify a stand alone, single benefit investment, but represent good business as a value-added transaction.")

92. See generally U.S. ARMY CORPS OF ENGINEERS & SOUTH FLORIDA WATER MANAGEMENT DISTRICT, RESCUING AN ENDANGERED ECOSYSTEM: THE PLAN TO RESTORE AMERICA'S EVERGLADES (July 1999).

93. Under the Coastal Wetland Protection, Planning, and Restoration Act, 16 U.S.C. §§ 3951-56 (2000), approximately \$40 million in wetland restoration projects are implemented each year in Louisiana. See K. BELHADJALI ET AL., COASTAL RESTORATION DIVISION ANNUAL PROJECT REVIEWS 1 (2002). The federal government will be financially responsible for all project planning expenses, and construction costs are shared. Initially, the federal portion was seventy-five percent, but it was increased up to ninety percent once Louisiana developed a State Wetland Conservation Plan. See 16 U.S.C. § 3952(f) (2000). For a discussion of the threats to Louisiana coastal wetlands and restoration efforts, see BILL STREEVER, SAVING LOUISIANA? THE BATTLE FOR COASTAL WETLANDS (2001).

94. See Bolinas Lagoon Ecosystem Restoration, at <http://www.bolinaslagoon.org> (last visited Feb. 2, 2003). The cost-sharing arrangements between the federal government and Marin County, the local sponsor, differ according to the phase of the restoration project. See *id.* The federal government paid for one hundred percent of the initial reconnaissance study, while the feasibility study is being cost-shared equally. See *id.* Costs for engineering design and physical restoration will be a sixty-five percent federal responsibility and a thirty-five percent local responsibility. *Id.* Maintenance of the completed project will be the local sponsor's responsibility. *Id.* Because Marin County lacks the financial resources to pay its share, the county has been supported by contributions from the state of California and the Bolinas Lagoon Foundation, a non-

Many potential restoration sites are not on publicly-owned lands, but instead are owned by private individuals and corporations.⁹⁵ These owners may view the benefits of restoration projects as primarily accruing to the public and not to themselves.⁹⁶ Accordingly, to encourage these owners to proceed with restoration projects on their lands, governments at all levels have provided financial support to defray project costs and to compensate for lost opportunity costs. These non-regulatory financial incentives sometimes take the form of cost-sharing agreements or direct payments to landowners. Occasionally, they are structured as negative incentives; a landowner will avoid a penalty, such as the cessation of government subsidies, if it restores a wetland. Some governments also use their tax codes to offer incentives, authorizing tax deductions or credits for restoration work.

A. Cost-Sharing and Direct Payments

The European Union, Canada, and the United States offer a host of programs in which landowners are compensated to restore wetlands.⁹⁷ The programs are sponsored at the supranational, national, and local levels and may be supported by non-governmental organizations. The four principal features that distinguish each program are: (1) the funding source or sources, (2) the eligibility requirements, (3) the types of payments the landowner receives and what the government obtains in return, and (4) the monitoring and enforcement provisions.

1. Funding Sources

Funding for some wetland restoration programs comes directly from an agency's annual appropriations. For example, the United States

governmental organization devoted to protecting the site. *Id.* The Foundation is funded by donations from individuals and philanthropic foundations. *See id.*

95. For example, approximately seventy-five percent of wetlands in the contiguous United States are privately owned. *See* Gardner, *supra* note 10, at 542; *see also* MICHIGAN DEP'T OF ENVTL. QUALITY, LIVING WITH MICHIGAN WETLANDS: A LANDOWNER'S GUIDE 2 (1998) (stating that "75 percent of Michigan's remaining wetlands are in private ownership"), available at <http://www.deq.state.mi.us/documents/deq-water-wetlands-chap1.pdf> (last visited May 13, 2003).

96. *See* RALPH E. HEIMLICH ET AL., WETLANDS AND AGRICULTURE: PRIVATE INTERESTS AND PUBLIC BENEFITS 3 (1998) (observing that "a wetland may provide habitat for migratory birds and reduce flooding on downstream properties, but fail to generate significant benefits for its owner"), available at <http://www.ers.usda.gov/publications/aer765/> (last visited May 13, 2003).

97. Some of these programs specifically target wetland restoration. Other programs that focus on providing habitat for endangered and threatened species and other wildlife may include wetland restoration as a component of their programs.

Congress appropriated approximately \$175 million⁹⁸ and \$1.5 billion,⁹⁹ respectively, for fiscal year 2001 for the Department of Agriculture's Wetland Reserve Program and Conservation Reserve Program. These appropriations are derived from general revenue, primarily individual income taxes. Similarly, the European Union's financial instrument, LIFE, has a five-year budget (2000-2004) of 640 million euros that the European Union's general revenues support.¹⁰⁰

Occasionally, a government may establish a trust fund that has multiple funding sources. The Wetlands Conservation Project, administered by the North American Wetlands Conservation Council to implement the NAWMP, relies on appropriations, interest earned on trust fund monies, and fines and penalties collected for violations of the Migratory Bird Treaty Act.¹⁰¹ The National Coastal Wetlands Conservation Grant Program, through which the U.S. Fish and Wildlife Service provides matching grants for protecting and restoring coastal wetlands, is funded by taxes on fishing equipment and motorboat and small engine fuels.¹⁰² A government may also use its bonding authority to raise money for restoration projects, as New York State did under its Environmental Bond Act.¹⁰³

Governments also fund restoration programs through non-conventional means. New York's Department of Environmental Conservation raised more than \$2.5 million by selling items such as prints, posters, and stamps.¹⁰⁴ This program gave Canada half of the revenue to restore waterfowl habitat, and New York used its share for similar projects.¹⁰⁵

Non-governmental organizations in the United States and Canada frequently contribute funds to programs that encourage private

98. *See* Catalog of Federal Domestic Assistance, *Wetlands Reserve Program*, at <http://aspe.os.dhhs.gov/cfda/p10072.htm> (last visited Nov. 11, 2002).

99. *See* Catalog of Federal Domestic Assistance, *Conservation Reserve Program*, at <http://aspe.os.dhhs.gov/cfda/p10069.htm> (last visited Nov. 13, 2002). Wetland restoration is only one part of the Conservation Reserve Program. *See infra* note 127 and accompanying text.

100. *See* Council Regulation 1655/2000 of 17 July 2000 Concerning the Financial Instrument for the Environment, 2000 O.J. (L 192) 6. LIFE focuses on three main areas—Environment, Nature, and Third Countries—and finances many activities, including wetland restoration projects. *Id.* at 2. LIFE-Nature funds are the most likely source for such projects. *See* LIFE-Nature Database, LIFE Projects, at <http://europa.eu.int/comm/environment/life/project/index.htm> (last updated Nov. 10, 2002).

101. *See* 16 U.S.C. § 4406 (2000).

102. *See* 16 U.S.C. § 3954 (2000).

103. *See* Dave Odell, *A Helping Hand for Waterfowl*, 55 N.Y. ST. CONSERVATIONIST 9, 11 (Apr. 2001).

104. *Id.* at 9.

105. *Id.*

landowners to restore wetlands. Under the North American Wetlands Conservation Act, the United States federal government may provide no more than half of a project's costs.¹⁰⁶ Provincial, state, and local governments, NGOs, and landowners must provide matching funds.¹⁰⁷ A number of NGOs have established matching-fund programs, such as Ducks Unlimited with its Matching Aid to Restore State Habitats (MARSH)¹⁰⁸ and Delta Waterfowl's Adopt-a-Pothole program.¹⁰⁹

The private sector may also provide funding for restoration projects. In the United States, the Corporate Wetlands Restoration Partnership is a mechanism by which corporate contributions are matched 4:1 by federal and state agencies.¹¹⁰ In return for the donations, corporations are recognized as "corporate sponsors" of the restoration projects.¹¹¹ The incentive of favorable publicity is discussed in greater detail in Part III.

2. Eligible Recipients

Several incentive programs are generally open to all property owners, with only some limitations. Examples include the European Union's LIFE-Nature,¹¹² Ontario's Wetland Habitat Fund,¹¹³ the U.S. Fish and Wildlife Service's Partners for Fish and Wildlife Program,¹¹⁴ the U.S.

106. See 16 U.S.C. § 4407 (2000).

107. See *id.*

108. See Ducks Unlimited Website, at <http://www.ducks.org/conservation/marsh.asp> (last visited Nov. 11, 2002).

109. See Delta Waterfowl Website, at <http://www.deltawaterfowl.org/programs/adopt.html> (last visited Nov. 11, 2002).

110. See Corporate Wetlands Restoration Partnership Website, at <http://www.coastalamerica.gov/text/cwrp.html> (last modified Aug. 16, 2002). For a further discussion of the CWRP, see *infra* Part III.A.2.

111. See, e.g., Corporate Wetlands Restoration Partnership, *Spotlight Projects*, at <http://www.coastalamerica.gov/text/cwrpproj.html> (last modified Apr. 4, 2002); The Gillette Company, *Environmental Programs*, at http://www.gillette.com/community/environment_wetlands.asp (last visited Nov. 10, 2002).

112. LIFE-Nature Application 2003, at 12 (stating that the program is "open to all natural and legal persons established in the European Union or in the candidate countries associated to LIFE"), available at http://europa.eu.int/comm/environment/life/funding/life-nat_call2003/index.htm (last visited Nov. 11, 2002).

113. Wetland Habitat Fund (providing financial assistance for private landowners in Ontario for "projects that improve the ecological integrity of wetland habitats"), at <http://www.wetlandfund.com>. The Wetland Habitat Fund is a partnership consisting of the Ontario Ministry of Natural Resources, the Canadian Wildlife Service, Wildlife Habitat Canada (a non-profit conservation organization established by Canadian environmental, wildlife, and conservation organizations), and the United States Fish and Wildlife Service. Wetland Habitat Fund, at <http://www.wetlandfund.com/partners.htm> (last visited Nov. 10, 2002).

114. U.S. Fish & Wildlife Service, *Partners for Fish and Wildlife Program* (private and tribal lands), at <http://partners.fws.gov> (last updated June 24, 2002). Since 1987, the Fish and Wildlife Service has worked with more than 27,000 landowners in this program, which

Department of Agriculture's Wildlife Habitat Incentives Program (WHIP),¹¹⁵ and the U.S. Environmental Protection Agency's Five-Star Restoration Challenge Grant Program.¹¹⁶ Recipients of financial compensation to restore wetlands under these programs range from governmental agencies and municipalities¹¹⁷ to NGOs,¹¹⁸ individuals,¹¹⁹ and corporations.¹²⁰

Other programs, however, are more restrictive in scope. Some programs focus on individuals and groups for which improving the environment is a primary goal. Accordingly, EcoAction, administered by Environment Canada, provides funding only to non-profit groups and

has restored approximately 575,000 acres of wetlands. *Id.* at http://partners.fws.gov/What_we_do/overview.html (last visited Nov. 10, 2002).

115. See Wildlife Habitat Incentive Program (WHIP), *Questions and Answers* (suggesting that all lands are eligible except federal land, land currently enrolled in similar programs, land subject to certain floodplain easements, and land where the USDA concludes that the habitat restoration is unlikely to succeed), at <http://nrcs.usda.gov/programs/whip> (last visited Nov. 11, 2002).

116. U.S. Environmental Protection Agency, *Five-Star Restoration Program* (stating that all private and public lands are eligible), at <http://www.epa.gov/owow/wetlands/restore/5star/> (last updated July 9, 2002). The five organizers of the program are the EPA, the National Association of Counties, the National Association of Service and Conservation Corps, the National Fish and Wildlife Foundation, and the Wildlife Habitat Council. U.S. Environmental Protection Agency, at <http://www.epa.gov/owow/wetlands/restore/5story/02factsheet.html> (last updated July 9, 2002).

117. See, e.g., Restoration of Habitats and Wildlife of the Skjern River (LIFE00 NAT/DK/007116) (identifying the Denmark Ministry of the Environment and Energy and the National Forest and Nature Agency as the LIFE-Nature beneficiary), at http://europa.eu.int/comm/life/cgi/life_search.pl?prog=NAT&nf=0&Seq_num=7116 (last visited Nov. 11, 2002); Restoration of Lake Osten: A Wetland of International Importance for Migrating Birds (identifying the Swedish County Administration of Västra Götaland as the LIFE-Nature beneficiary), at http://europa.eu.int/comm/life/cgi/life_search.pl?prog=NAT&nf=0&seq_num=6355 (last visited Nov. 11, 2002); U.S. Environmental Protection Agency, *Five Star Projects Funded in FY 2001* (identifying Franklin Township, New Jersey, as a grant recipient), at <http://www.epa.gov/owow/wetlands/restore/5star/01grants.html> (last updated July 3, 2002).

118. See, e.g., Restoration and Management of the Häädemeeste Wetland Complex (LIFE00 NAT/EE/007082) (identifying the Estonian Ornithological Society as the LIFE-Nature beneficiary), at http://europa.eu.int/comm/life/cgi/life_search.pl?prog=NAT&nf=0&seq_num=7082 (last visited Nov. 11, 2002); U.S. Environmental Protection Agency, *Projects Funded by Five Star Restoration Program in FY 00* (identifying Chartiers Nature Conservancy, Inc., of Pennsylvania as a grant recipient), at <http://www.epa.gov/owow/wetlands/restore/5star/fy00grants.html> (last updated July 3, 2002).

119. See, e.g., USFWS, *Partners for Fish and Wildlife Program* (discussing Dr. Thomas Dick's restoration of a former agricultural area), at <http://partners.fws.gov/AWARDS/EL1194.html> (last visited Sept. 5, 2002).

120. E.g., U.S. Environmental Protection Agency, *Projects Funded by Five Star Restoration Program in FY 1999* (identifying BP Amoco Chemical Co. as a grant recipient), at <http://www.epa.gov/owow/wetlands/restore/5star/5strgrants.html> (last updated July 31, 2002).

organizations for activities that will measurably benefit the physical environment, such as wetland restoration projects.¹²¹ Other programs target sectors that have largely been responsible for wetland losses. Much wetland loss in the United States has historically occurred as a result of agricultural activities.¹²² Two of the largest restoration programs in the United States, the Wetlands Reserve Program¹²³ and the Conservation Reserve Program,¹²⁴ are limited to agricultural lands.¹²⁵ The Wetlands Reserve Program specifically encourages wetland restoration on cropland, pastures, rangelands, and forests.¹²⁶ The Conservation Reserve Program's objectives are to persuade farmers to plant cover to enhance soil, water, and wildlife conditions, including wetland restoration projects.¹²⁷ Indeed, in 2001, the Department of Agriculture announced the creation of the Farmable Wetlands Pilot Program, as part of the Conservation Reserve Program.¹²⁸ The pilot program's goal is to improve vegetation and hydrology and to restore up to 500,000 acres of wetlands in six states.¹²⁹

A particular program may have more applicants for funding than available money, and a ranking methodology is then applied. Under the Conservation Reserve Program, for example, the United States Department of Agriculture (through the Natural Resources Conservation Service (NRCS)) ranks applicants according to an

121. Environment Canada, *EcoAction Applicant's Guide* 1-2, available at http://www.pyr.ec.gc.ca/ecoaction/about/appguide_e.htm (last visited Nov. 10, 2002). EcoAction funding is available for many environmental projects, including those that have wetland restoration as a component. See, e.g., Environment Canada, *Surfacing: Restoring a Naturalist's Dream*, at http://www.pyr.ec.gc.ca/georgiabasin/stories_gbi/surfacing_Restoring_a_naturalist's_dream.htm (last updated Sept. 12, 2002).

122. See NRC, COMPENSATING FOR WETLAND LOSSES, *supra* note 7, at 16-17 (noting that agriculture was responsible for fifty-four percent of total wetland losses in the United States from the mid-1970s to mid-1980s). The rate of agricultural conversions from 1986-1997, however, dramatically dropped by almost ninety percent. *Id.* (reporting annual wetland losses from agriculture declined from approximately 138,000 acres per year to approximately 15,000 acres per year).

123. 7 C.F.R. § 1467 (2002).

124. 7 C.F.R. § 1410 (2002).

125. Other United States programs, such as the Environmental Quality Incentives Program, also seek to encourage farmers and ranchers to undertake voluntary conservation efforts, including wetland restoration. See 7 C.F.R. § 1466 (2002).

126. 7 C.F.R. § 1467.4 (2002) (listing program requirements).

127. 7 C.F.R. §§ 1410.3, 1410.5, 1410.6 (2002) (providing a general description of eligible persons and eligible land).

128. Press Release, Farm Service Agency, USDA To Help Restore Wetlands Through Six-State Pilot Program (June 4, 2001), available at <http://www.fsa.usda.gov/pas/printstory.asp?StoryID=243>.

129. *Id.* (stating that the initial acreage allotments are: 100,000 acres in Iowa; 100,000 acres in Minnesota; 25,000 acres in Montana; 75,000 acres in Nebraska; 100,000 acres in North Dakota; and 100,000 acres in South Dakota).

Environmental Index (EI).¹³⁰ The EI considers factors such as wildlife benefits, water quality, soil productivity, compliance considerations, and cost.¹³¹

It is important to ensure that a payment program not create perverse incentives to degrade wetlands in order for the landowner to become eligible to receive compensation. A program should be structured to prevent such scenarios. Thus, the Wetlands Reserve Program specifically excludes from eligibility wetlands that were converted to agricultural use after 1985.¹³²

3. *Quid pro Quo*

Governments will employ a number of different financial arrangements to entice participation in wetland restoration efforts. It appears, at least in the European Union, Canada, and the United States, that a common governmental contribution will pay for fifty percent of the restoration costs, subject to a cap on the government's overall share of the costs. The European Union's LIFE-Nature establishes fifty percent as the maximum rate of co-financing, although this may be increased up to seventy-five percent in exceptional circumstances.¹³³ Ontario's Wetland Habitat Fund offers private landowners up to fifty

130. 7 C.F.R. §§ 1410.1(f), 1410.31(b) (2002).

131. 7 C.F.R. § 1410.31(b) (2002).

132. See 7 C.F.R. § 1467.4 (2002). The year 1985 is a significant date for agriculture and wetlands in the United States. Under the terms of the Swampbuster Act, a farmer who converts a wetland to agricultural use after December 23, 1985 runs the risk of losing many federal benefits. See *infra* Part II.B.

133. LIFE-Nature Application, *supra* note 112, at 11. If the project is "clearly aim[ed] at [the conservation of] priority natural habitats . . . or priority species," LIFE-Nature may provide up to seventy-five percent of the funding when the project is in a candidate country or if the beneficiary is an NGO. *Id.* If the project is not in a candidate country and if the beneficiary is not an NGO, the maximum contribution is sixty percent. *Id.* If a project involves the conservation of non-priority habitats and species, the maximum contribution is capped at fifty percent. *Id.*

The payments are made in three installments. See LIFE, Annex IV, Standard Administrative Provisions, art. 23, available at http://europa.eu.int/comm/life/nature/2002/disp_en.pdf (last visited Nov. 10, 2002). The first is an advance payment, which is forty percent of the Community's financial contribution. *Id.* art. 23.2. A second installment of thirty percent is made when the beneficiary has incurred at least thirty percent of the project's expected costs. *Id.* art. 23.3. The balance is paid upon completion of the project and after receipt of the final audit. *Id.* art. 23.4.

In exchange for this financial assistance, the member state in whose territory the project takes place must "designate/propose the areas restored for NATURA 2000 by the end of the project (unless the restoration process clearly failed)." LIFE-Nature Application, *supra* note 112, at 9. In associated candidate countries, the government must "put in place the most appropriate legal protection under national law for the areas restored by the end of the project (unless the restoration process clearly failed)." *Id.*

percent of project costs, with a cap of \$5000 (Canadian).¹³⁴ Similarly, Environment Canada's EcoAction will provide up to \$100,000 (Canadian) for projects but requires recipients to obtain matching funds or in-kind support.¹³⁵ The in-kind support may include the provision of equipment, materials, office space, volunteer time, and consulting services.¹³⁶ Thus, through the use of volunteers and donations, an organization's cash contributions may be significantly less than fifty percent. United States programs, such as the WHIP and the Environmental Quality Incentives Program, offer technical assistance and up to seventy-five percent of project costs.¹³⁷ In return, the landowner agrees by contract to maintain the site or to continue the conservation practices for a five to ten-year term.¹³⁸

To provide additional encouragement, some programs offer "incentive payments" in addition to the cost-sharing of restoration costs.¹³⁹ Under the Environmental Quality Incentives Program, landowners may receive incentive payments for up to three years.¹⁴⁰ The Conservation Reserve Program offers a one-time incentive payment that is no more than twenty-five percent of project costs.¹⁴¹

As a further incentive, some programs provide for rental payments to the landowner during the duration of the agreement.¹⁴² For example, the rental rates under the Conservation Reserve Program are based on "the relative productivity of soils within each county and the average dryland cash rent or the cash-rent equivalent."¹⁴³ Rental rates are capped at \$50,000 per year per person.¹⁴⁴

The level of payment may also be contingent on what the government (and public) receives in return. For example, under the Wetlands Reserve Program, payments will vary depending on the duration of the agreement. If the landowner agrees to convey a permanent easement to

134. See Wetland Habitat Fund, at <http://www.wetlandfund.com/english.htm> (last visited Feb. 6, 2002). As of June 2002, this fund had contributed an average of \$2858 to 408 conservation and enhancement projects. *Id.*

135. Environment Canada, *EcoAction Applicant's Guide*, *supra* note 121, at 2, 5.

136. *Id.* at 2.

137. See 7 C.F.R. § 636.6 (2002) (WHIP); 7 C.F.R. §§ 1466.8, 1466.23 (2002) (EQIP).

138. See 7 C.F.R. § 636.8 (2002) (WHIP); 7 C.F.R. §§ 1466.21-.22 (2002) (EQIP).

139. See, e.g., 7 C.F.R. § 1466.23 (2002).

140. 7 C.F.R. § 1466.23(b) (2002) (providing, however, that the total compensation is capped at \$10,000 per person per year and \$50,000 per person per contract).

141. 7 C.F.R. § 1410.41(c) (2002).

142. See, e.g., 7 C.F.R. § 1410.42 (2002) (CRP).

143. Farm Service Agency Online, *Fact Sheet Conservation Reserve Program* (Jan. 2002) (explaining annual rental payments), available at <http://www.fsa.usda.gov/pas/publications/facts/html/crp02.htm>; 7 C.F.R. § 1410.42 (2002).

144. 7 C.F.R. § 1410.42(c) (2002).

the Department of Agriculture, the agency will pay for the easement and one hundred percent of restoration costs.¹⁴⁵ For a thirty-year easement, the agency will provide between fifty and seventy-five percent of what it would pay for a permanent easement and seventy-five percent of restoration costs.¹⁴⁶ If the landowner does not wish to convey a property interest such as an easement, the landowner and the agency may agree that the site will be restored and maintained for a minimum of ten years. In such cases, the agency will not make an easement payment, but will pay up to seventy-five percent of restoration costs.¹⁴⁷

4. Monitoring and Enforcement

Public benefits only accrue if the restoration project is successfully implemented. Accordingly, compliance monitoring is an important aspect of ensuring that the landowner is taking action in accordance with the agreed plan and performance standards.¹⁴⁸ The incentive arrangements or contracts typically specify that governmental officials may enter the site for inspections.¹⁴⁹ Sometimes this monitoring or inspection authority is delegated to other federal or state agencies or to "external teams" of independent contractors.¹⁵⁰ These inspections and monitoring have an importance beyond ensuring compliance and taking corrective actions at a particular site.¹⁵¹ The data they provide are also critical for building upon the base of knowledge necessary to improve future wetland restoration projects.¹⁵²

145. 7 C.F.R. § 1467.9 (2002).

146. *Id.*

147. 7 C.F.R. § 1467.9(a)(2) (2002).

148. See, e.g., Bill Streever, *Examples of Performance Standards for Wetland Creation and Restoration in Section 404 Permits and an Approach to Developing Performance Standards* (1999), in *Compensating for Wetland Losses Under the Clean Water Act*, available at <http://www.nap.edu/openbook/0309074320/html/220.html> (last visited Nov. 11, 2002). Although this paper discusses performance standards for restoration projects in the context of a regulatory program, the examples and lessons are transferable to non-regulatory settings.

149. For example, Wetlands Reserve Program easements must grant the government a right of access to the site. See 7 C.F.R. § 1467.10(b)(1) (2002). Agreements under the Conservation Reserve Program must also provide for government access to the property and allow the government to examine records. See 7 C.F.R. § 1410.55 (2002). LIFE-Nature recipients must allow access during the project and up to five years after the project's completion or final payment. See LIFE, Annex IV, *supra* note 133, art. 29.2.

150. See, e.g., 7 C.F.R. § 1467(e) (allowing the delegation of management, monitoring, and enforcement to other agencies); LIFE, Annex IV, *supra* note 133, art. 8.1 (authorizing use of external monitoring teams).

151. NRC, COMPENSATING FOR WETLAND LOSSES, *supra* note 7, at 128 (discussing the importance of early monitoring to allow for adaptive management).

152. *Id.* at 168 (recommending that agencies "establish a research program to study mitigation sites to determine what practices achieve long-term performance").

One aspect of monitoring is a reporting requirement. Participants in these programs typically must provide periodic updates. For example, Ontario Wetland Habitat Fund sends landowners an annual monitoring card to complete.¹⁵³ LIFE-Nature appears to have the most comprehensive reporting requirements, calling for one or more progress reports, an interim report, and a final report within three months of the project's completion.¹⁵⁴ In addition, an independent financial audit must be conducted to ensure that the beneficiary has used the payments properly.¹⁵⁵

If the landowner violates the terms of the contract or easement, governmental agencies have a number of enforcement options: 1) the landowner may simply be given notice and a reasonable time to cure the violation voluntarily,¹⁵⁶ 2) the government may decline to provide further payments,¹⁵⁷ and 3) the government may demand that the landowner refund payments previously received, perhaps with interest.¹⁵⁸ Sometimes the government may reserve the right to enter the property and take corrective action itself, the expenses for which the landowner is responsible.¹⁵⁹ If the government seeks redress in court, the landowner may also be responsible for the government's attorneys' fees.¹⁶⁰

In practice, however, it appears that such enforcement actions, at least in the United States, are rare for several reasons. First, some governmental agencies may lack the necessary appropriations to conduct rigorous monitoring.¹⁶¹ Second, the nature of these programs is not conducive to bringing many enforcement actions. The programs seek to establish partnerships between the agencies and the landowners (and perhaps others) in a non-regulatory setting. Frequent enforcement actions would discourage landowner participation in the programs.

153. E-mail from Christine Craig, Administrative Assistant, Ontario Wetland Habitat Fund (Apr. 9, 2002).

154. LIFE, Annex IV, *supra* note 133, art. 11.

155. LIFE, Annex IV, *supra* note 133, art. 27.

156. 7 C.F.R. § 1467.14(a) (2002) (allowing for thirty days or more to resolve problems in the Wetlands Reserve Program); LIFE, Annex IV, *supra* note 133, art. 14.1 (providing that the Commission, upon one month's written notice, may terminate the contract or agreement if the beneficiary fails to comply with its obligations).

157. See 7 C.F.R. § 1467.14(e) (2002) (Wetlands Reserve Program); 7 C.F.R. § 1410.52(a)(2)(i) (2002) (Conservation Reserve Program); LIFE, Annex IV, *supra* note 133, art. 13.4 (reserving the right of the Commission to suspend payments).

158. See 7 C.F.R. § 1410.52(a)(2)(i) (2002) (Conservation Reserve Program); LIFE, Annex IV, *supra* note 133, art. 24.2-3 (stating that the Commission may seek full or partial repayment, plus interest).

159. See 7 C.F.R. § 1467.14(b) (2002) (Wetlands Reserve Program).

160. *Id.* § 1467.14(d).

161. See NRC, COMPENSATING FOR WETLANDS LOSSES, *supra* note 7, at 156-57.

Accordingly, governmental agencies typically only take enforcement action against willful, flagrant violators.¹⁶²

B. Avoidance of Financial Penalties

Sometimes the financial incentive to restore wetlands is more of a stick than a carrot. In these cases, the incentive to restore a wetland is not money directly related to the restoration work; rather, the landowner is motivated to do restoration work to maintain eligibility for other governmental financial benefits. One aspect of the Swampbuster program provides a good example of this technique.¹⁶³

As noted above, much of the wetland losses in the United States have been attributable to agricultural activities, which were strongly encouraged and heavily subsidized by the federal government.¹⁶⁴ The Swampbuster program, enacted in 1985, represented a dramatic shift in federal policy.¹⁶⁵ If a farmer drained or altered a wetland to produce an agricultural commodity, the farmer would be ineligible to receive federal benefits, such as loans, subsidized insurance, and price and income supports.¹⁶⁶ The program was amended in 1996 to allow farmers more flexibility.¹⁶⁷ If a farmer converted a wetland for the production of an agricultural commodity, the farmer would remain eligible for federal benefits so long as the conversion activity had only a minimal effect on an area's hydrological and biological values.¹⁶⁸ Additionally, to remain eligible for federal benefits, the farmer must fully mitigate wetland losses through a restoration, enhancement, or creation project.¹⁶⁹

The restoration project is subject to several important conditions. First, the federal government will not pay for restoration work.¹⁷⁰ Second, the mitigation project must proceed in accordance with an NRCS-approved wetland conservation plan prior to or concurrent with

162. Cf. CONGRESSIONAL RESEARCH SERVICE, CONSERVATION COMPLIANCE FOR AGRICULTURE: STATUS AND POLICY ISSUES 5 (updated Apr. 12, 1998) (discussing criticism of NRC's enforcement efforts), available at <http://www.nceonline.org/NLE/CRSreports/Agriculture/ag-45.cfm> (last visited May 13, 2003).

163. See MARGARET N. STRAND, WETLANDS DESKBOOK 73 (2d ed. 1997) (describing the Swampbuster program).

164. See, e.g., Swamp Land Act, ch. 84, 9 Stat 519. (1850); see also HEIMLICH, *supra* note 96, at 24-25.

165. See Erodable Land and Wetland Conservation and Reserve Program, 16 U.S.C. §§ 3801-3862 (2000); 7 C.F.R. pt. 12 (2002); see also HEIMLICH, *supra* note 96, at 28.

166. See 16 U.S.C. § 3821(c) (2002); see also STRAND, *supra* note 163, at 73.

167. See 16 U.S.C. § 3822 (2002) (listing exemptions).

168. *Id.* § 3822(f)(1).

169. *Id.* § 3822(f)(2).

170. *Id.* § 3822(f)(2)(C).

the conversion action.¹⁷¹ Typically, the plan will not require restoration on more than a 1:1 acreage basis (*i.e.*, no more than one acre restored for every acre converted),¹⁷² and the project must take place within the "same general area of the local watershed as the converted wetland."¹⁷³ Furthermore, a conservation easement must be placed on the restored wetland.¹⁷⁴ The NRCS is responsible for monitoring the restoration work for compliance purposes.¹⁷⁵

C. Tax Deductions and Credits

Governments have long relied on tax codes to encourage certain behavior, and wetland conservation and restoration activities are no exception. These so-called "tax expenditures" come in many forms.¹⁷⁶ Governments have provided relief from property taxes, allowed taxpayers to take deductions and claim credits for wetland restoration expenses, and exempted conservation-oriented organizations from sales and use taxes.

In Canada, rural municipal governments encourage farmers to practice "environmentally friendly stewardship on their land" through an Environmental Tax Credit Program.¹⁷⁷ Participating farmers agree to protect native habitat, including wetlands, and receive a one-dollar-per-acre reduction in property taxes.¹⁷⁸ In the first two years of the program,

171. *Id.* § 3822(f)(2)(A)-(B). If the conversion was inadvertent, the restoration project may be completed up to one year after the conversion. *Id.* § 3822(h)(2).

172. *Id.* § 3822(f)(2)(D). Greater ratios may be required if needed to provide equivalent functions and values; it is presumed that greater than 1:1 acreage will be required for creation projects. *See id.* § 3822(f)(2)(D)-(E).

173. *Id.* § 3822(f)(2)(F).

174. *Id.* § 3822(f)(2)(G). The easement must remain in force so long as converted wetland remains in agricultural use or is not restored. *Id.* § 3822(f)(2)(G)(ii).

175. *Id.* § 3822(j).

176. *See, e.g.*, Edward A. Zelinsky, *James Madison and Public Choice at Gucci Gulch: A Procedural Defense of Tax Expenditures and Tax Institutions*, 102 YALE L.J. 1165 (1993).

177. *See* Agriculture and Agri-Food Canada, *Environmental Tax Credit Proving Popular with Manitoba Farmers*, at <http://www.agr.ca/pfra/growth/feature/credit.htm> (last modified Oct. 7, 1999).

178. *See id.*; *see also* Agriculture and Agri-Food Canada, *Farmers Earning Some "Green" By Going Green*, at <http://www.agr.ca/pfra/growth/feature/nswcp3.htm> (last modified Apr. 17, 2000) [hereinafter Agriculture and Agri-Food Canada, *Going Green*]. Agriculture and Agri-Food Canada suggested, perhaps overly optimistically, that because wetlands are taxed at approximately fifty cents per acre, a participating farmer might even be able to make a small profit. *See id.* One study found that "[a]lthough the majority of landowners agreed that \$1 per acre was not adequate compensation for carrying out sustainable farming practices, the fact that the landowners remain in control of their land makes the Environmental Tax Credit program more attractive than many other conservation programs." Christine M. Van De Velde, *An Evaluation of the Manitoba*

61,000 and 88,000 acres qualified for the tax credit.¹⁷⁹ While much of this acreage was not wetland (native grassland, tame forage areas, and non-wetland riparian areas were also eligible) and most of the stewardship did not involve active restoration efforts,¹⁸⁰ the principles behind the Environmental Tax Credit Program nevertheless are transferable to a program expressly targeting wetland restoration.¹⁸¹

Of course, a one-dollar-per-acre tax reduction will not begin to cover the expenses of active wetland restoration efforts. Accordingly, some governments permit taxpayers to deduct or claim credit for such expenses against their income tax. The state of Arkansas allows a credit of up to \$5000 per year "for any taxpayer engaged in the development or restoration of wetlands and riparian zones."¹⁸² To be eligible, the taxpayer must have the wetland restoration plans approved by a "Private Lands Restoration Committee."¹⁸³ From 1998 to 2001, the Committee approved thirty-six projects, resulting in the restoration, enhancement, and creation of over 2,750 acres of wetland and riparian zones.¹⁸⁴

Environmental Tax Credit Program 214 (2000) (thesis submitted to the Natural Resources Institute, University of Manitoba) (on file with author).

179. *See* Agriculture and Agri-Food Canada, *Going Green*, *supra* note 178.

180. *See* Van De Velde, *supra* note 178, at 14. Although the program may not provide sufficient incentives to take active measures to restore an area, one of the program's objectives is to "preserve existing habitat and therefore lessen the cost of restoration in the future." *Id.* at 13.

181. The state of Hawaii also has a property tax relief program that could, in theory, encompass wetland restoration actions, although it would not be attractive to landowners who wish to retain control of the property. *See* HAW. REV. STAT. ANN. § 183-15 (Michie 2001). A landowner may voluntarily "surrender" land to the "care, custody and control" of the Hawaii Department of Land and Natural Resources for a period of twenty years or more. *Id.* Part of the "care" of the property could be wetland restoration activities. *See id.* In exchange, the landowner is exempted from all property taxes for the period in which the land remains under the control of the Department of Land and Natural Resources. *Id.* If the landowner revokes the agreement prior to its expiration, the landowner then must pay all back taxes plus interest. *Id.*

182. ARK. CODE ANN. § 26-51-1505(a)-(b) (Michie 1997). This section also provides that any unused tax credit may be carried over for nine consecutive tax years; accordingly, the maximum credit per taxpayer is \$50,000. *See id.* § 26-51-1505(b)(2)(B).

183. *Id.* § 26-51-150(a)(1)-(3). The seven-member Committee consists of representatives from five state agencies (Forestry Commission, Game and Fish Commission, Department of Finance and Administration, Department of Arkansas Heritage, and Department of Environmental Quality) and two "public members with expertise in wetland ecology." *Id.* § 26-51-1503(4). Restoration projects that are performed to satisfy mitigation required by state or federal law are not eligible for the program. *See* Arkansas Soil & Water Conservation Comm. (ASWCC), Fact Sheet, *Wetland and Riparian Zones Tax Credit Program*, available at <http://www.accessarkansas.org/aswcc/page18.html> (last visited Nov. 14, 2002).

184. *See* E-mail from Kenneth Colbert, Environmental Program Manager, ASWCC, to author (June 3, 2002) (on file with author). Total tax credits granted have been approximately \$380,000, and the average tax credit per project was approximately \$10,500.

In addition to relying on the tax code to encourage private landowners to restore wetlands, some governments provide tax relief to organizations that engage in restoration efforts. For example, Louisiana exempts sales and use taxes for sales made by non-profit organizations dedicated to protecting the wetland habitat of waterfowl.¹⁸⁵ The exemption applies so long as all proceeds of the sales are used for the organization's environmental objectives.¹⁸⁶ While the legislation does not refer specifically to wetland restoration, such actions would be included easily within the concepts of "the conservation of fish or . . . migratory waterfowl" and "the preservation and conservation of wetland habitat of such waterfowl."¹⁸⁷

III. NON-CASH INCENTIVES OUTSIDE OF TRADITIONAL, PERMIT-BASED REGULATORY PROGRAMS

A government may lack funds or be unwilling to commit funds to provide direct or indirect financial assistance to encourage landowners to restore wetlands voluntarily. Instead, a government may choose to impose a permit-based regulatory program that requires the restoration of wetlands, an approach examined in Part IV. Yet there exists a middle ground between cash payments and regulatory mandates: a government may be in a position to bestow, or create a system that bestows, other non-cash benefits upon landowners who restore wetlands. These incentives – such as favorable publicity, the right to use wetland resources, and exemptions from certain land-use regulations – may take place in the context of regulatory regimes, but not necessarily in a traditional, permit-based regulatory program. Moreover, these incentives, while characterized as non-cash because the government is not providing funding to the landowner, may nevertheless have economic value. Often these incentive programs are not aimed at wetland restoration specifically, but their objectives are broad enough to include such actions.

A. Good Will in the Marketplace: The Incentive of Favorable Publicity

The effective protection of wetlands must begin with education; it is critical to inform the public generally about the functions and values of wetlands. People must also be informed about actions, both negative and positive, that affect specific wetlands. The adverse or positive publicity generated by the release of this information can serve as an incentive to restore wetlands. This information is typically made available to the

185. LA. REV. STAT. ANN. § 47:305.43(A) (West 2001).

186. *Id.*

187. *Id.*

public through: (1) environmental impact procedures, (2) programs that formally recognize private philanthropy, and (3) eco-labeling programs.

1. Environmental Impact Procedures

The legal requirement to conduct an environmental impact assessment often is part of a permit-based regulatory program.¹⁸⁸ The process of reviewing the probable environmental effects of a proposed project informs both the public and the regulatory agency. The agency will use the data, and perhaps the public's reaction, to make a decision about whether the permit should be granted and, if so, under what conditions. An environmental impact assessment, however, by virtue of informing the public about proposed development activities, may also have utility outside of a traditional, permit-based regulatory system. By exposing proposed projects, the environmental impact assessment process may prompt landowners to take environmentally beneficial actions to garner favorable publicity or to avoid negative publicity.

The case of a proposed waste-handling facility in eastern Ontario provides a good case study in this regard.¹⁸⁹ The proposed project would eliminate approximately 175 hectares of a 1,700 hectare wetland classified as provincially significant, almost all of which was privately owned.¹⁹⁰ The environmental assessment process, however, pointed out that provincial governmental agencies ultimately lacked the authority to prevent the development of the site in the long term.¹⁹¹ Ongoing activities such as sod farming and peat extraction, which were exempted from wetland regulations, would eventually eliminate the wetland.¹⁹² At that point, the province's wetland policies would not apply to the construction of the waste facility.

The Ontario Ministry of Natural Resources thus decided to enter into a memorandum of understanding (MOU) with the company.¹⁹³ To

188. *See, e.g.*, National Environmental Policy Act of 1969, 43 U.S.C. §§ 4321-437001 (2002); Canadian Environmental Assessment Act R.S.C., ch. C-15, preamble (2002) (assented to 1992). International agreements also call on countries to conduct environmental impact assessments. *See, e.g.*, Convention on Biological Diversity, *supra* note 23, art. 14, at 827-28; Convention on Access to Information, Public Participation in Decision-Making and Access to Justice on Environmental Matters, 38 I.L.M. 517 (1999); *see also* United Nations Conference on Environmental Development, *Rio Declaration on Environment and Development*, 31 I.L.M. 874, 879 (1992) (Principle 17).

189. *See* Brian Potter et al., *Wetland Compensation Agreement: Eastern Ontario Waste Handling Facility*, in NORTH AMERICAN WETLANDS CONSERVATION COUNCIL (CANADA), WETLAND MITIGATION IN CANADA 26-30 (2000).

190. *See id.* at 26.

191. *See id.*

192. *See id.*

193. *See id.* at 28.

mitigate for the loss of the 175 hectares of wetland, the company agreed to secure, enhance, restore, and create 800 hectares of wetland (a 4.57:1 compensation ratio).¹⁹⁴ In addition, the company committed to create a trust fund of at least \$1.5 million (Canadian) for wetland conservation activities, including restoration, in eastern Ontario.¹⁹⁵ Why would a company enter into such an arrangement, especially in light of the fact that the governmental agency had limited bargaining power? In part, the company was "willing to negotiate a compensation agreement[] in the interests of being a 'good corporate citizen.'"¹⁹⁶ One may assume that the likely favorable publicity resulting from the MOU and trust fund played a significant role in the company's deliberations.

The public notice aspect of environmental impact assessments should not be overlooked when considering the incentive of favorable publicity. If a company is to receive good publicity for wetlands restoration, the public must be aware of its efforts. Moreover, if a company is to be prodded into providing more restoration than it otherwise might be legally obligated to do, the public must take an active role in the process. The environmental impact assessment is a vehicle that brings both forces to bear. The release of environmental impact information has some influence on corporate behavior, as the United States has seen with its annual Toxics Release Inventory.¹⁹⁷ The release of such information alters corporate behavior out of a concern that consumers and investors may react negatively to the reports.¹⁹⁸

2. Rewarding Corporate (and Others') Philanthropy

Tax codes may encourage corporations to make charitable contributions to organizations, including those engaged in wetland

194. *See id.* at 29.

195. *See id.* at 29-30. The payments were based on the level of waste-handling activity at the site. *See id.* at 29. The MOU provided that the company would begin contributing to the Trust Fund when it was processing 50,000 tonnes of waste annually. *See id.* For each tonne over 50,000, the company would contribute one dollar, up to a maximum of \$1.5 million. *See id.* If, in the first five years, the company handled less than 50,000 tonnes in a single year, the company need not make any payments that year. *See id.* The company also had the option of nullifying the agreement. *See id.* In such an event, the company would be obligated to pay \$1.5 million (less any previous contributions) to the Trust Fund "immediately upon cancellation of the agreement." *Id.*

196. *Id.* at 27.

197. Emergency Planning and Community Right-to-Know Act, 42 U.S.C. §§ 11001-11050 (2000) (establishing a program where facilities must report releases and transfers of toxics to the U.S. EPA, which then releases the data to the public).

198. *See* James T. Hamilton, *Is the Toxics Release Inventory News to Investors*, 16 NAT. RESOURCES & ENV'L 292 (2001) (noting that the Toxics Release Inventory affects the stock price of some companies).

restoration activities.¹⁹⁹ While there is some financial benefit from the tax deduction, the real value to corporations is the favorable publicity. The value to the environment depends on whether the money is channeled to worthwhile projects and whether the corporate contribution can be leveraged to spur additional funding. The Corporate Wetlands Restoration Partnership (CWRP), a recent initiative in the United States, seeks to provide value to both the donors and the environment.

The CWRP encourages corporations to make contributions, either cash or services, for aquatic restoration activities.²⁰⁰ The Coastal America Partnership, a consortium of federal entities, decides (in consultation with state agencies, NGOs, and donors) which private foundation or state trust fund should receive the contribution.²⁰¹ Thus far, twenty-one corporations have promised to donate over one million dollars in funds and services.²⁰² The first CWRP project, the restoration of a fifty-acre site at the Sagamore Salt Marsh in Massachusetts, began in April 2000.²⁰³

What prompts the companies to be good corporate citizens? As the CWRP fact sheet explains, the benefit to companies joining the CWRP is favorable publicity: being identified with "highly visible" environmental projects, "[p]ublic recognition" for its work in the community, and "positive . . . media coverage."²⁰⁴ The companies that participate are identified as sponsors of the project in signage at the site.²⁰⁵

199. *See, e.g.*, 26 U.S.C. § 170 (2000). *See generally* Symposium, *Corporate Philanthropy*, 28 STETSON L. REV. 1 (1998).

200. *See* Corporate Wetlands Restoration Partnership, at <http://www.coastalamerica.gov/text/cwrp.html> (last modified Aug. 16, 2002).

201. *See id.* (discussing the CWRP's operating principles), at <http://www.coastalamerica.gov/text/cooperating.html> (last modified Apr. 4, 2002).

202. *See id.* (listing as partners Gillette, Raytheon, Genzyme, Polaroid, and Massachusetts Electric), at <http://www.coastalamerica.gov/text/cwrppart.html> (last modified Apr. 4, 2002).

203. *See id.* (describing the Sagamore Salt Marsh restoration project), at <http://www.coastalamerica.gov/text/sagamore.html> (last modified Apr. 5, 2002); The Gillette Company, Environmental Programs, at http://www.gillette.com/community/environment_wetlands.asp (last visited Nov. 10, 2002).

204. Coastal America, *Corporate Wetlands Restoration Partnership, Frequently Asked Questions*, at <http://www.coastalamerica.gov/text/cwrpfaq.html> (last modified Apr. 4, 2002). Interestingly, the brochure also identifies "improved communications with federal, state, and local agencies" as a benefit of participation. *Id.* Conflict-of-interest issues may arise when a corporation makes a donation to a foundation or trust fund that is largely controlled or influenced by a regulatory agency. *Cf.* Royal C. Gardner, *Money for Nothing? The Rise of Wetland Fee Mitigation*, 19 VIRG. ENVTL. L.J. 1, 44-45 (2000) (discussing conflict-of-interest issues related to cash donations to satisfy wetland mitigation requirements). The corporation may be, in effect, making a financial contribution to its regulators. *Id.*

3. Eco-labeling

Another example of the incentive of favorable publicity is eco-labeling, which identifies environmentally responsible companies or products that have been produced in an environmentally sensitive manner.²⁰⁶ Recognizing that such market incentives prompt some companies to act in a more environmentally responsible manner, some commentators have suggested that such an approach might be applied in the wetland context to "encourage industry to mitigate or compensate wetland losses or impacts which result from business operations."²⁰⁷ At this point, however, there does not appear to be an eco-labeling program that expressly contains a wetland-restoration component.²⁰⁸

Public relations efforts regarding wetland restoration activities are not confined to U.S. corporations. See, e.g., W.J. Streever, *Trends in Australian Wetland Rehabilitation*, 5 WETLANDS ECOLOGY & MANAGEMENT 5, 14 (1997) (noting that thirty-one of sixty-nine rehabilitation projects in Australia "reported at least some public relations activities," including the use of print, television, and radio media, brochures, signs, site tours, and public meetings).

205. See Coastal America, *Corporate Wetlands Restoration Partnership, Frequently Asked Questions*, at <http://www.coastalamerica.gov/text/cwrpfaq.html> (last modified Apr. 4, 2002). Although corporate sponsorship is prevalent at athletic and academic venues, corporate sponsorship of environmental sites can be controversial. See, e.g., Richard J. Ansson, Jr., *Funding Our National Parks in the 21st Century: Will We Be Able To Preserve and Protect Our Embattled National Parks?*, 11 FORDHAM ENVTL. L.J. 1, 56 (1999) (arguing that "corporate sponsorship may also essentially be an invitation for environmentally destructive corporations to donate money in an attempt to 'greenwash' their image").

206. See Avi Gesser, Comment, *Canada's Environmental Choice Program: A Model for a "Trade Friendly" Eco-Labeling Scheme*, 39 HARV. INT'L L.J. 501, 503-05 (1998) (defining eco-labels and discussing the objectives of eco-labeling schemes).

207. NAWCC(C), MITIGATION AND COMPENSATION, *supra* note 10, at 27.

208. One area of intersection between wetlands and eco-labels may be Irish peat bogs. See Irish Peatland Conservation Council (IPCC), *Campaign Action*, at <http://www.ipcc.ie/currentaction2005-11.html> (last visited Nov. 6, 2002). The IPCC objects to the use of moss peat for horticultural and gardening activities on the grounds that peat extraction for such purposes is not sustainable. See *id.* The IPCC reports:

It is difficult to argue that peat extraction for horticulture is essential, when peat free gardening products exist, made from renewable resources including materials that would otherwise go to waste, and create landfill problems which need to be tackled if Ireland is to meet the requirements of the EU Landfill Directive. Similar conclusions have been reached by the EU's ECO labelling scheme which has refused an ECO label to soil improvers containing peat.

Id. (emphasis added). Although the IPCC's Conservation Plan 2005 calls on the peat industry to "research methods to restore harvested bogs to their natural function as ecosystems accumulating peat," there is apparently no direct link between wetland restoration and eco-labels. *Id.*

Another possible link between wetlands and eco-labels is the Ramsar site in Doñana National Park in Spain. As part of a long-term strategy, the regional government created Doñana 21, a public-private foundation dedicated to the sustainable development of the Doñana region. See Fundación Doñana 21, *Qué Es Doñana 21*, at <http://www.donana.es/donana.htm> (last visited Nov. 7, 2002). The foundation has approved the use of a quality label, which is awarded to companies that operate near Doñana National Park when those companies provide goods or services in a manner that respects the environment. See Fundación Doñana 21, *Etiqueta de Calidad*, at <http://www.donana.es/etiqcalidad.htm>. While wetland restoration is not included in the criteria for the quality label, one can envision an eco-labeling program that considers such activities. See *id.*

Nevertheless, the lack of a formal eco-labeling program has not discouraged some companies from publicizing their contributions to wetland restoration efforts. For example, the logo of Banrock Station, a wine producer in Australia, proclaims "Good Earth, Fine Wine."²⁰⁹ The company has funded restoration projects in Australia and has constructed a Wine and Wetland Centre on its property.²¹⁰ Furthermore, a portion of the proceeds from the sale of its wines is donated to wetland organizations in eight other countries.²¹¹ Other companies may follow Banrock Station's lead, especially if wetland restoration is incorporated as a component of eco-labels.

B. The Incentive To Use Wetland Resources

One mechanism to encourage wetland restoration and management is to allow the person or entity engaged in the restoration to enjoy the tangible benefits of the project. If the restoration project occurs on public lands, the government may decide to reward a project participant with exclusive access to the site and its resources. If the restoration project is on private property, the government may decide to grant certain privileges not otherwise available to property owners, such as expanded hunting opportunities.

1. Granting Exclusive Access or Use: The Incentive of Private Rights in Public Property

Many coastal wetlands are government-owned.²¹² Yet many people may depend on these wetlands for their livelihood, through fishing, crabbing, or collecting firewood.²¹³ Accordingly, one threat to these

donana.es/donana.htm (last visited Nov. 7, 2002). The foundation has approved the use of a quality label, which is awarded to companies that operate near Doñana National Park when those companies provide goods or services in a manner that respects the environment. See Fundación Doñana 21, *Etiqueta de Calidad*, at <http://www.donana.es/etiqcalidad.htm>. While wetland restoration is not included in the criteria for the quality label, one can envision an eco-labeling program that considers such activities. See *id.*

209. See Banrock Station Wines website, at <http://www.banrockstation.com.au/au/> (last visited Nov. 14, 2002).

210. See Banrock Station Wines, *Banrock Station Wetlands*, at <http://www.banrockstation.com.au/au/wetlands.asp?UID=0.5795186> (last visited Nov. 6, 2002).

211. See *id.* (listing Canada, Denmark, Finland, the Netherlands, New Zealand, Sweden, the United Kingdom, and the United States).

212. See UNITED NATIONS FOOD AND AGRICULTURE ORGANIZATION (FAO), INTEGRATED COASTAL AREA MANAGEMENT AND AGRICULTURE, FORESTRY AND FISHERIES, FAO GUIDELINES, § 1.3.6 (1998) ("Coastal forests tend to be owned by the state."), available at <http://www.fao.org/docrep/W8440e/W8440e00.htm> (last visited Nov. 6, 2002).

213. See, e.g., Brenda M. Katon et al., *Mangrove Rehabilitation and Coastal Resource Management: A Case Study of Cogtong Bay, Philippines*, AFSSRNEWS (Apr.-June 1998),

wetlands is over-utilization, especially as users of different resources come into conflict and newcomers relocate to the area.²¹⁴ In response, some governments have turned to granting private rights to wetland resources to encourage wetland restoration and sustainable use.²¹⁵

The use of private rights does not preclude a community-based approach to wetland restoration. Indeed, by adopting a community-based approach, a site may be better conserved in the long term, as the Cogtong Bay project in the Philippines demonstrates.²¹⁶ Cogtong Bay was viewed as a common area, with open access for all resource users; however, the construction of fishponds and wood harvesting was degrading the mangrove forest and threatening the viability of traditional fishing villages.²¹⁷ A public-private initiative sought to rehabilitate the area and "transform resource users into resource managers who are directly responsible for day-to-day resource decisions."²¹⁸

A critical component of the project was Certificate of Stewardship Contracts (CSCs).²¹⁹ Local groups, such as fishermen associations, and individuals applying to the Philippine Department of Environment and Natural Resources (DENR) for a CSC were required to develop a mangrove management plan, including replanting, for particular sites.²²⁰ If the DENR granted a CSC, the recipient, in exchange for implementing the plan, would obtain a twenty-five-year exclusive right to harvest the site's resources.²²¹ The promise of such usufruct leases or tenurial rights was instrumental to securing local participation in the projects.²²² An

at 46-47 (providing examples of a Malaysian community dependent on fishing, crabbing, and collecting firewood).

214. See *id.* at 47-48 (discussing over-utilization of Cogtong Bay).

215. FAO, *supra* note 212, at § 1.3.6.

216. Katon et al., *supra* note 213, at 47-48.

217. *Id.*

218. *Id.* at 48.

219. See *id.*

220. See DENR Administrative Order No. 30, Subject: Implementing Guidelines for Non-Government Organization Assisted Community-Based Mangrove Forest Mangement (NGO-Assisted CBMFM) for the DENR (Sept. 30, 1994), available at <http://www.bknet.org/lowsldao30.html>.

221. *Id.* §§ 2(i), 4.2, 6; see also Katon et al., *supra* note 213, at 48.

222. See Katon et al., *supra* note 213, at 52 (reporting that regression analysis "indicates that the possession of property rights is a key explanatory variable that influences perceptions of positive changes in the overall performance of co-management"); R.O.D. de Leon & A.T. White, *Mangrove Rehabilitation in the Philippines*, in AN INTERNATIONAL PERSPECTIVE ON WETLAND REHABILITATION 37, 41 (William Streever ed. 1999) (concluding that a reason "for initial high participation by the community in reforestation efforts was the promised tenurial security"); W. Neil Adger & Cecilia Luttrell, *Property Rights and the Utilisation of Wetlands*, 35 ECOLOGICAL ECONOMICS 75, 87 (2000) (emphasizing that "issues of tenure and security of use-rights are fundamental to sustainable resource use"). If, however, the government does not

additional benefit of enlisting local support through the granting of private rights is that the locals are more keen to protect the area from unauthorized users.²²³

Even governments that are ordinarily hostile to the concept of private property rights have experimented with employing this mechanism to restore wetlands. In the coastal Mekong Delta, Vietnam is rehabilitating mangrove forests with international assistance.²²⁴ To ensure that local communities participate in the project, the government is allocating to individuals and households five to ten-hectare plots.²²⁵ The individual or household agrees to protect and manage the site; in exchange, they may use a portion of this area for aquaculture purposes.²²⁶

2. Saving Nature To Kill It: The Incentive of Increased Bag Limits and Hunting Seasons

Hunters, especially hunters of waterfowl, have long been supportive of wetland restoration.²²⁷ Many hunters realize that if they are to have ducks to shoot, the ducks must have adequate places to live and breed.²²⁸ Accordingly, a government may use the desire to hunt as an incentive for wetland restoration.

California provides an example, albeit one not directed at wetlands. The state has adopted a policy of encouraging wildlife habitat enhancement on private lands.²²⁹ Private landowners may apply to the California Department of Fish and Game to operate a Private Wildlife

deliver on the promise of property rights or the rights are otherwise uncertain, then community support will wane. See de Leon & White, *supra*, at 41 (stating that "goodwill has been eroded where the promised tenurial rights did not materialize"); Mathias Burt & Brett Hudson, *User Groups Play Key Role in St. Lucia*, INTERCOAST NETWORK (Mar. 1997), at 8 (reporting that "insecurity of tenure" for charcoal producers "is a disincentive to conserve" mangroves).

223. See Katon et al., *supra* note 213, at 51; see also Alfredo Quarto, *Local Community Involvement in Mangrove Rehabilitation: Thailand's Yadfon*, in AN INTERNATIONAL PERSPECTIVE ON WETLAND REHABILITATION (William Streever ed., 1999) (discussing the importance of community participation in management of "village community forests").

224. See W. Benthem et al., *Mangrove Rehabilitation in the Coastal Mekong Delta, Vietnam*, in AN INTERNATIONAL PERSPECTIVE ON WETLAND REHABILITATION (William Streever ed., 1999) [hereinafter Benthem I]; Wandert Benthem et al., *Rehabilitating the Mangrove Forests of the Mekong Delta*, INTERCOAST NETWORK (Mar. 1997), at 9 [hereinafter Benthem II].

225. Benthem I, *supra* note 224, at 31; Benthem II, *supra* note 224, at 9.

226. Benthem I, *supra* note 224, at 31; Benthem II, *supra* note 224, at 9.

227. LEWIS, *supra* note 8, at 6-8.

228. See, e.g., Ducks Unlimited Website, at <http://www.ducks.org> (last visited Nov. 10, 2002); Delta Waterfowl Website, at <http://www.deltawaterfowl.org> (last visited Nov. 10, 2002).

229. See CAL. FISH & GAME CODE § 3400 (West 1998 & Supp. 2002).

Management Area.²³⁰ The application must include management objectives and a detailed plan on how those objectives will be achieved.²³¹ If the application is approved and the management actions are implemented, the landowner receives a hunting license that "may authorize seasons and bag limits which differ from those established for the general seasons."²³² The additional hunting, however, should not have "an overall negative effect on the species population."²³³

While California's program appears to target deer, antelope, and elk aficionados, there is no reason that a similar program could not be applied to wetland restoration projects on private lands. In return for implementing such a project, a landowner could be rewarded with an extended hunting season for wetland-dependent birds or additional takes of other wetland-dependent species. Of course, if there is to be a net benefit with respect to the harvested species, the additional takes permitted should not exceed the gains produced by the restoration project.

C. Safe Harbors: The Incentive Not To Be Bound by Additional Land-Use Restrictions

Wetlands are home to many threatened and endangered species.²³⁴ Accordingly, privately owned wetlands may be subject to regulation not as wetland per se, but as a habitat for these species.²³⁵ In the United States, for example, the Endangered Species Act prohibits the "taking" of protected species, a phrase that includes significant habitat modification that results in actual injury to an individual of a protected species.²³⁶ Similarly, in the European Union, the Habitats Directive requires member states to prohibit the "deterioration or destruction" of a protected species' breeding or resting sites.²³⁷ Ironically, such laws may

230. 14 CAL. CODE REGS. tit. 14, § 601 (2002).

231. *Id.* § 601(b)(1)(C)-(D).

232. *Id.* § 601(b)(5)(A).

233. *Id.*

234. See WILLIAM WANT, LAW OF WETLANDS REGULATION 2-3 (2002) (estimating that, in the United States, up to twenty percent of endangered species are wetland-dependent).

235. See, e.g., U.S. GENERAL ACCOUNTING OFFICE, ENDANGERED SPECIES ACT: INFORMATION ON SPECIES PROTECTION ON NONFEDERAL LANDS, GAO/RCED-95-16, at 1 (Dec. 1994) (finding that as of 1993 over ninety percent of protected species for which the Fish and Wildlife Service is responsible "have habitat on nonfederal lands").

236. See *Babbitt v. Sweet Home Chapter of Cmty. for a Great Oregon*, 515 U.S. 687, 690 (1995).

237. Council Directive 92/43, art. 12, 1992 O.J. (L 206).

serve as a disincentive for landowners to manage their property for the benefit of such species.²³⁸

Consider the case of a landowner who owns a severely degraded wetland that presently has no endangered species. In the site's present condition, the landowner may have little or no difficulty securing governmental permission to drain and fill the ailing wetland for development purposes. If the landowner has no current plans to develop, perhaps the landowner might wish to manage the land for environmental purposes. If, however, the landowner does manage the land for environmental purposes and is successful in recruiting endangered species to the site, when the landowner later attempts to develop the property, a governmental agency will be less inclined to allow the project to proceed. In effect, the landowner is punished for a good deed (or doing a good deed for a limited period of time).

To encourage landowners to manage their properties voluntarily, including wetlands, for habitat purposes, the United States government adopted a "safe harbor" policy.²³⁹ Under this policy, a landowner and the Fish and Wildlife Service enter into an agreement where the baseline condition of the property is described, along with a management plan.²⁴⁰ In exchange for the landowner's voluntary implementation of the management plan to enhance the property's value as habitat, the government agrees not to impose any additional regulatory restraints on the property, which may result from the management plan's implementation.²⁴¹ In other words, the landowner is allowed to return the site to its baseline conditions, even if the property becomes the home of a protected species.

The incentive to manage properties is created by the removal of a regulatory disincentive. The landowner who enters into a safe harbor agreement may manage the property for the benefit of protected species, yet will not lose future development opportunities by doing so.²⁴² While the safe harbor policy has broad application beyond wetlands, it has been employed to encourage the restoration of wetlands. One example is the

238. Kevin K. Loftus & W. Dan Mansell, *Ontario's Experience with a "No Loss" Wetland Policy: Is There a Role for Compensation?*, in NAWCC(C), MITIGATION AND COMPENSATION, *supra* note 10, at 50. Indeed, Ontario's experience with its "no loss" policy for wetlands is instructive. See *id.* Although the policy "was successful in protecting many wetlands . . . [s]ome landowners who had conserved the wetlands on their properties began to think of them as liabilities, and some who understood the policy's limitations took steps to destroy their wetlands through legal activities." *Id.*

239. See Announcement of Final Safe Harbor Policy, 64 Fed. Reg. 32,717 (June 17, 1999).

240. *Id.*

241. *Id.*

242. See *id.*

December 2001 safe harbor agreement to benefit two Hawaiian waterfowl, the koloa and the nene.²⁴³ The landowner agreed to restore palustrine emergent marshes, along with several hundred adjacent acres of koa forest.²⁴⁴ The restoration plan will be critical to the survival of the koloa and the nene, as their numbers are measured in the hundreds.²⁴⁵

IV. RESTORATION INCENTIVES IN REGULATORY PROGRAMS

Permit-based regulatory systems, which require governmental permission before one may fill, damage, or otherwise alter a wetland, can encourage wetland restoration projects. A wetland permit may contain a mitigation condition that requires the permittee to restore a certain amount of wetlands. Thus, the incentive to restore a wetland is directly related to the desire to obtain a permit to conduct activities that are harmful to other wetlands.

In theory, a permit-based system is consistent with, and may even contribute to, the goal of no net loss of wetland functions and values. For example, if a permittee receives permission to fill five acres of waterfowl habitat on the condition that it restores ten acres of such habitat in the same watershed, the result is a net gain of five acres of habitat.²⁴⁶ Of course, this conclusion assumes that the mitigation – the restoration of the ten acres – is effective. Often, however, the promised mitigation project may fail or only partially satisfy performance standards. Moreover, many such mitigation projects are commenced concurrent with or after the completion of the permitted activity. In such cases, it is clear that wetland functions and values are lost at the development site. It is not clear whether the restoration project, which may take years to complete, will offset those impacts.

Concern about the effectiveness of restoration projects provided by permittees prompted some governmental agencies to examine alternative approaches to mitigation. One such approach, employed primarily in the

243. See *Safe Harbor Agreement and Habitat Management Plan for Koloa (Hawaiian Duck) and Nene (Hawaiian Goose) on Umikoa Ranch, Island of Hawaii*, available at http://www.environmentaldefense.org/documents/1808_HIEndwaterfowlSHfulltext.pdf (last visited Nov. 12, 2002).

244. *Id.*

245. Environmental Defense Fund, *Safe Harbor Agreement for Endangered Hawaiian Waterfowl*, available at <http://www.environmentaldefense.org/article.cfm?ContentID=136> (last visited Nov. 12, 2002).

246. Acreage is often used as a rough approximation for quantifying no net loss of functions and values. Whether the restoration project actually results in a net gain of functions and values depends on what functions and values were lost when the wetland was filled and on the differential between the baseline conditions and the resulting mitigation at the restoration site.

United States, is mitigation banking.²⁴⁷ The core concept of mitigation banking is advance mitigation – the mitigation project is provided or begins in advance of the development project.²⁴⁸ While a permittee may create its own mitigation bank, private entrepreneurs have entered the mitigation banking market.²⁴⁹ These entrepreneurial banks, sometimes called commercial banks, may sell the mitigation credit they produce to permittees that must satisfy a mitigation condition.²⁵⁰ Thus, from the entrepreneur's perspective, an incentive to restore a wetland is the ability to make a return on its investment.

A. Traditional Mitigation Schemes

Many permit-based regulatory programs have significant jurisdictional limitations based on activity or type of wetland. For example, Ugandan regulations require a wetland resource use permit for certain activities in wetlands, such as brickmaking, drainage, aquaculture, and the commercial exploitation of wetland resources.²⁵¹ Other activities, such as the harvesting of papyrus, cultivation of less than twenty-five percent of the wetland's total area, and collection of water for domestic use, are exempted from regulation.²⁵² The European Union requires the protection of ecosystems, including wetlands, through the Habitats Directive and the Birds Directive, but these measures are limited to Natura 2000 sites.²⁵³ Similarly, Australia's national permit requirements apply to a limited set of wetlands.²⁵⁴ In Australia, a person must seek

247. ENVIRONMENTAL LAW INSTITUTE, *BANKS AND FEES: THE STATUS OF OFF-SITE MITIGATION IN THE UNITED STATES* 8 (2002) (stating that "[i]n the past ten years, wetland mitigation banking has thrived as a compensatory mitigation technique to mitigate for wetland impacts in the United States") [hereinafter ELI, *BANKS AND FEES*].

248. Federal Guidance for the Establishment, Use and Operation of Mitigation Banks, 60 Fed. Reg. 58,605, 58,607 (Nov. 28, 1995).

249. ELI, *BANKS AND FEES*, *supra* note 247, at 22 (reporting that entrepreneurial, or private commercial banks, "represent the majority of all banks").

250. *Id.*

251. National Environment (Wetlands, River Banks and Lake Shore Management) Regulations, 1999, at ¶ 12, Form A, First Schedule, Second Schedule (Uganda), available at <http://www.nemaug.org/wetlandsweb.htm>.

252. *Id.* ¶ 11(2). For a discussion of wetland management in Uganda, see REINT J. BAKEMER & LUCY IYARGO, *ENGAGING LOCAL USERS IN THE MANAGEMENT OF WETLAND RESOURCES: THE CASE OF THE NATIONAL WETLANDS PROGRAMME, UGANDA* (2000) and Benjamin J. Richardson, *Scales of Environmental Management: Wetlands Conservation in Kenya and Uganda*, 8 AFRICAN J. INT'L COMP. L. 904 (1996).

253. Council Directive 92/43, art. 3, 1992 O.J. (L 206); Council Directive 79/409, 1979 O.J. (L 103) 1. NATURA 2000 consists of Special Areas of Conservation (designated pursuant to the Habitats Directive) and Special Protection Areas (designated pursuant to the Birds Directive). See Stephen Crooks et al., *No Net Loss the European Union Way*, 23 NAT'L WETLANDS NEWSL. 1 (Jan.-Feb. 2001).

254. Environment Protection and Biodiversity Conservation Act, 1999 (Austl.).

approval from the Commonwealth government for any action that is likely to have a significant impact on the ecological character of a Ramsar wetland.²⁵⁵ Regional and local regulations, such as New South Wales' State Environmental Planning Policy 14, which requires a development consent for projects in coastal wetlands, may fill gaps, but not entirely.²⁵⁶ Even in the United States, which probably has the most extensive regulation of privately owned wetlands, debate continues about which activities in which wetlands trigger the federal Clean Water Act permit requirement.²⁵⁷

When applicable, however, these permit programs contain a common thread: a requirement for the permittee to mitigate wetland impacts, which may include restoration measures. Ugandan regulations state that a permit holder has an implied covenant to "remove or restore the wetland to as near the state it was as possible immediately before the commencement of the permitted activities" within one year of the permit's expiration or revocation.²⁵⁸ Other permit schemes contemplate that mitigation will be provided prior to or at least concurrent with the permitted activity. For example, explaining the requirements of compensatory measures under the Habitats Directive, the European Commission suggests that "a site should not be irreversibly affected by a project before the compensation is indeed in place."²⁵⁹ Under the Clean

255. *Id.*

256. See Environmental Defenders Office Ltd., *Fact Sheet 26: Coastal and Marine Protection* (noting that rehabilitation methods are considered in the decision to grant or deny development consent), at <http://www.edo.org.au/edonsw/publications/factsheet26.htm> (last visited Nov. 12, 2002); see also Environmental Defenders Office Ltd., *Fact Sheet 4: Development Consents* (stating that consents "are often issued subject to conditions"), at <http://www.edo.org.au/edonsw/publications/factsheet4.htm> (last visited Nov. 12, 2002). Canada, with its patchwork of federal and provincial laws, also provides an example of a regulatory scheme that does not cover all wetlands or all activities that affect wetlands. See NAWCC(C), WETLANDS AND GOVERNMENT 27-57 (1999) (summarizing various federal and provincial wetland statutes and policies).

257. See, e.g., *Solid Waste Agency v. U.S. Army Corps of Eng'rs*, 531 U.S. 159, 174 (2001) (holding that Corps' regulation of isolated wetlands based on habitat for migratory birds was contrary to congressional intent); see also Royal C. Gardner, *Casting Aside the Tulloch Rule*, 20 NAT'L WETLANDS NEWSL. 5 (Sept.-Oct. 1998) (discussing the decision that invalidated the Corps' regulation of incidental discharges of dredged or fill material into waters of the United States).

258. National Environment (Wetlands, River Banks and Lake Shore Management) Regulations, 1999, ¶ 16(d) (Uganda), available at <http://www.nemaug.org/wetlandsweb.htm>.

259. EUROPEAN COMMISSION, MANAGING NATURA 2000 SITES: THE PROVISIONS OF ARTICLE 6 OF THE 'HABITATS' DIRECTIVE 92/43/CEE § 5.42, at 42-43 (2000) [hereinafter EC, MANAGING NATURA 2000] ("For example, a wetland should normally not be drained before a new wetland, with equivalent biological characteristics, is available for inclusion in the NATURA 2000 network[.]."), available at <http://europa.eu.int/comm/environment/nature/natura.htm>.

Water Act, the United States allows a longer time period for the compensation project to be completed.²⁶⁰ Impacts to wetlands are authorized in advance of a completed mitigation action if the permittee has provided adequate financial assurances and demonstrated that the mitigation is likely to succeed.²⁶¹ Prior to proceeding with the permitted activity, however, the regulatory agency should approve the mitigation plans and the permittee should acquire the mitigation site, ensuring that there is a permanent water source available. Furthermore, the permittee is to commence with the initial mitigation work within the first full growing season after the permit has been granted.²⁶² In cases where mitigation success is more uncertain, the regulatory agency may seek higher mitigation ratios and additional financial guarantees.²⁶³

Many permit programs express a preference that compensatory mitigation be a tool of last resort. Under the Habitats Directive, a European Union member state must first perform a preliminary assessment to determine a proposed project's likely effects on the conservation status of protected sites.²⁶⁴ The assessment process should consider alternative solutions, including the "zero option" or cancelling the project, and possible actions that could minimize the project's impacts.²⁶⁵ Only after the assessment, and only after the member state concludes that "imperative reasons of overriding public interest" require the project to proceed, should restoration be considered.²⁶⁶ The European Commission's guidance on the Habitats Directive makes it very clear that this "sequential order" must be followed: "compensatory measures should be considered only after having precisely ascertained a negative impact on the integrity of a Natura 2000 site."²⁶⁷ The United States and Canada have articulated a similar assessment sequence, in which the regulatory agency must first consider if avoiding the wetland is possible and whether unavoidable impacts can be minimized.²⁶⁸ If negative impacts remain, then the agency evaluates the appropriate amount of compensatory mitigation. Ordinarily, a permit applicant

260. USACE, RGL No. 02-2, *supra* note 10, at 7.

261. *Id.*

262. *Id.*

263. *Id.* at 11.

264. See Council Directive 92/43, art. 6.3, 1992 O.J. (L 206).

265. EC, MANAGING NATURA 2000, *supra* note 259, § 5.3.1.

266. *Id.* § 5.3.

267. *Id.* § 5.4.1.

268. See U.S. Army & U.S. EPA, Mitigation MOA, *supra* note 8, at 5; NAWCC(C), MITIGATION AND COMPENSATION, *supra* note 10, at 7 (discussing THE FEDERAL POLICY ON WETLAND CONSERVATION: IMPLEMENTATION GUIDE FOR FEDERAL LAND MANAGERS (1996)).

should not be able to offer an attractive mitigation plan to obviate the need to apply the sequence of "avoid-minimize-compensate."²⁶⁹

One reason that agencies have discouraged consideration of compensatory actions early in the permitting process is the concern that the mitigation project will not truly offset the development project's impacts. This concern is warranted in light of studies pointing to deficiencies with compensatory mitigation projects. As the United States National Research Council (NRC) recently observed, some mitigation projects required for Clean Water Act permits were never carried out.²⁷⁰ In many cases where mitigation was attempted, the project failed to result in a self-sustaining wetland or did not offset the impacts of the permitted activity.²⁷¹ The NRC attributed the mitigation failure to a number of factors, including the lack of clear performance standards in permits, a paucity of monitoring and enforcement, and little long-term maintenance of mitigation sites.²⁷²

Mitigation conditions in a permit can in fact create an incentive to restore wetlands.²⁷³ The incentive to restore a site effectively dissipates, however, when there are no measurable performance standards and when regulatory agencies exercise little oversight. This concern is particularly relevant when a permittee is providing restoration after the permitted activity has taken place. At that point, the permittee has achieved what it desired (whatever the development activity might be) and is likely seeking to dispose of the mitigation condition in the least expensive manner possible. Indeed, a business may view the costs of wetland restoration as frivolous.²⁷⁴ The challenge for the regulatory agency is to ensure that an incentive – such as avoiding fines, penalties, and bad publicity – remains in place to prod recalcitrant permittees to meet their legal obligations.²⁷⁵

269. In the United States, deviations from this strict sequence are allowed for small projects or small landowners. See Gardner, *supra* note 10, at 538-39.

270. NRC, COMPENSATING FOR WETLAND LOSSES, *supra* note 7, at 101.

271. *Id.* at 3-6.

272. *Id.* at 6-8.

273. Moreover, to the extent that the public and other interested stakeholders are involved in the process of determining the appropriate level of mitigation, the incentive of favorable publicity may also be a factor. For a consensus-building approach to developing mitigation plans, see NAWCC(C), MITIGATION AND COMPENSATION, *supra* note 10, at 24-25 (discussing a participatory-consultative approach).

274. Streever, *supra* note 204, at 14 (reporting the response of an Australian company to a questionnaire on wetland rehabilitation projects).

275. The ability to require restoration as part of an enforcement action for illegal activities may also be part of a regulatory agency's arsenal. See, e.g., GRETHEL AGUILAR ROJAS & MARCIA GONZÁLEZ AGUILUZ, MANUAL DE LEGISLACIÓN SOBRE HUMEDALES DE COSTA RICA 75-76 (1998) (discussing civil responsibility for environmental damage).

B. Wetland Mitigation Banking: Creating Market Incentives for Restoration

Mitigation banking developed in the United States as a result of dissatisfaction with mitigation provided by permittees concurrent with or after development projects. United States federal agencies define mitigation banking as "restoration, creation, enhancement and, in exceptional circumstances, preservation of wetlands and/or other aquatic resources expressly for the purpose of providing compensatory mitigation in advance of authorized impacts to similar resources."²⁷⁶ A mitigation bank differs from traditional mitigation with respect to timing; in a mitigation bank the restoration work should be done up front, not after the development project. This definition of a mitigation bank also excludes cash donations or payments from a permittee to a natural resource organization or agency, where the entity receiving the money will use it for mitigation projects in the future.²⁷⁷ Again, the difference is a matter of timing.²⁷⁸

Another difference between mitigation banking and traditional, permittee-provided mitigation is the level of scrutiny afforded to mitigation banks. An interagency review is conducted before a mitigation bank sponsor receives authorization to construct and operate the bank.²⁷⁹ The "Mitigation Banking Review Team" (MBRT) consists of natural resource experts from interested agencies. The MBRT will evaluate the general need for the bank, the bank site's baseline ecological condition, the technical feasibility of the proposed mitigation work, and the procedures governing the use of the bank.²⁸⁰ The MBRT and the bank sponsor will sign a document, the mitigation banking instrument, which will describe how the bank will operate, including what financial assurances are required and how the site will be protected and managed for the long term.²⁸¹

If the mitigation bank site fails to meet the performance standards specified in the banking instrument, it receives little or no credit from the

276. Federal Guidance for the Establishment, Use, and Operation of Mitigation Banks, 60 Fed. Reg. 58,605, 58,607 (Nov. 28, 1995).

277. See *id.* Such payments for future mitigation projects are sometimes called in-lieu-fee mitigation or fee mitigation. See *id.* at 58,613. See generally Gardner, *supra* note 204.

278. Indeed, partly out of a concern about the timing of in-lieu-fee projects, federal agencies issued guidance that sought to require in-lieu-fee arrangements to provide mitigation in a more timely fashion. See Federal Guidance on the Use of In-Lieu-Fee Arrangements for Compensatory Mitigation Under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, 65 Fed. Reg. 66,914 (Nov. 7, 2000).

279. Federal Guidelines for the Establishment, Use, and Operation of Mitigation Banks, 60 Fed. Reg. at 58,609.

280. *Id.*

281. *Id.*

regulatory agencies.²⁸² If, however, the site satisfies the standards, the bank generates mitigation credits, which then may be used to offset unavoidable impacts to other wetlands.²⁸³ Nothing precludes a permittee from constructing a mitigation bank for its own use. Indeed, if a prospective permittee knows that it will require wetland permits, and thus will have to provide compensatory mitigation, it might perform restoration work in advance of impacts to facilitate the permitting process.²⁸⁴ An additional incentive for such permittees is that the regulatory agencies may impose lower mitigation ratios if the permittee can demonstrate that its bank site will likely result in a self-sustaining wetland.²⁸⁵

Most prospective permittees, however, are not inclined to construct mitigation banks for their own use because the establishment of a mitigation bank requires an up-front investment of capital that many permittees do not have.²⁸⁶ Even if a permittee has the available capital, it will probably be reluctant to part with it, given that: (1) the regulatory agency does not require advance mitigation and (2) the risk of failure remains entirely with the permittee. If the permittee attempts a restoration project as part of a bank and the project fails, the bank should offer little or no mitigation credit.²⁸⁷ On the other hand, if the permittee waits and attempts a restoration project after the development project proceeds, and the restoration fails, the permittee might not be required to remedy the situation.²⁸⁸ In these circumstances, a mitigation bank for a permittee's own use makes little sense, especially if the permittee is not involved in projects that result in large mitigation requirements.

Nevertheless, permittees still have a legal requirement to provide mitigation. As the federal agencies began to approve the concept of mitigation banks, private entrepreneurs entered the field. An

282. *See id.*

283. *See id.* at 58,608.

284. Entities that are involved in the construction of linear projects, such as highways and pipelines, which are likely to affect wetlands, are likely candidates to support a single-user or permittee-sponsored bank. *See* ENVIRONMENTAL LAW INSTITUTE, WETLAND MITIGATION BANKING 5 (1993) (reporting that as of July 1992 "twenty-two of the [forty-six] banks are operated by the state departments of transportation to mitigate for highway construction").

285. *See* U.S. Army & U.S. EPA, Mitigation MOA, *supra* note 8, at 9212-13.

286. *See* Leonard Shabman et al., *Wetlands Credit Sales as a Strategy for Achieving No-Net-Loss: The Limitations of Regulatory Conditions*, 18 WETLANDS 471, 473-78 (1998) (discussing financial challenges related to mitigation banking).

287. Federal Guidelines for the Establishment, Use, and Operation of Mitigation Banks, 60 Fed. Reg. 58,605, 58,612 (Nov. 28, 1995).

288. *See* NRC, COMPENSATING FOR WETLAND LOSSES, *supra* note 7, at 122 (discussing "sparse compliance monitoring").

entrepreneurial banker offers two significant benefits to a permittee seeking to satisfy mitigation conditions. First, because of economies of scale, the banker may be able to offer mitigation credits at a lower cost than if the permittee attempted mitigation itself.²⁸⁹ Second, the banker assumes the legal responsibility for the success of the mitigation project.²⁹⁰ Once the permittee pays the banker (with the regulatory agencies' approval), the permittee has satisfied its legal obligations regarding mitigation.²⁹¹ It is now the banker's responsibility to ensure that performance standards continue to be satisfied.

Yet entrepreneurial mitigation banking is a risky financial endeavor (and was even more so when its regulatory status was uncertain). A bank sponsor must invest money to prepare environmental studies, navigate through the regulatory approval process, acquire the site, and commence biological improvements.²⁹² Then the banker must wait, because until the bank site has satisfied the specified performance standards, the banker should have few mitigation credits to sell.²⁹³ If the performance standards are not met, the banker should have nothing to sell. Accordingly, it may take years for the banker to earn a return on its investment.

To minimize these risks, some mitigation bankers have entered into public-private partnerships. For example, one of the earliest entrepreneurial mitigation banks was operated by Florida Wetlandsbank, Inc., in Pembroke Pines, Florida.²⁹⁴ The company entered into an arrangement with the City of Pembroke Pines, where the company ultimately agreed to restore and enhance 445 acres of city-owned

289. Gardner, *supra* note 204, at 10.

290. *Id.* Many entrepreneurial bankers will also arrange for a second transfer of responsibility, that of the long-term management of the site to a conservation-oriented entity. *See* NRC, COMPENSATING FOR WETLAND LOSSES, *supra* note 7, at 86.

291. Regulatory agencies do not dictate the purchase price of credits; it is a matter between the banker and the permittee. Instead, the agency dictates how much mitigation credit from the bank would satisfy the permittee's obligations.

292. *See* Shabman et al., *supra* note 286, at 474.

293. To encourage mitigation banks and to ensure their financial feasibility, an agency may allow a banker to sell a limited number of early credits. *See* Federal Guidelines for the Establishment, Use, and Operation of Mitigation Banks, 60 Fed. Reg. 58,605, 58,612 (Nov. 28, 1995). Typically, these early releases are heavily conditioned and require financial assurances from the bank sponsor. *See id.* A recent report by the Environmental Law Institute found that approximately ninety percent of mitigation banking instruments allow for some early releases. ELI, BANKS AND FEES, *supra* note 247, at 64.

294. *See* Florida Wetlandsbank Website (stating that it was the "[f]irst company in Florida and one of the first in the nation to obtain a U.S. Army Corps of Engineers permit for a private mitigation bank"), at <http://www.wetlandsbank.com/floridawetlandsbank/aboutfloridawetlandsbank.shtml> (last visited Nov. 10, 2002).

degraded wetlands.²⁹⁵ When the company sold a mitigation credit, part of the proceeds went to the city.²⁹⁶ A portion of the city's share was dedicated to long-term maintenance of the site, and part could be used by the city for other purposes.²⁹⁷ Thus, the city benefitted from the arrangement, and the banker was able to avoid the carrying costs of owning land while proceeding through the lengthy approval process.

Mitigation banking offers a number of advantages over traditional, permittee-provided mitigation.²⁹⁸ From an environmental perspective, a restoration project in a mitigation bank is more likely to be successful. The mitigation bank is subject to more regulatory oversight, is given clear performance standards to achieve, and little or no credit is generated if those standards are not met. Furthermore, permittees welcome mitigation banks because they may be a source of less expensive mitigation, and they shift the legal responsibility for ecological conditions to the bank sponsor. By consolidating mitigation in larger sites, mitigation banks also make it easier for regulatory agencies to conduct monitoring, thereby possibly freeing up agency resources for other activities, such as enforcement against illegal activities.²⁹⁹

Some find utilizing the profit motive to spur wetland restoration disquieting; they object to the concept that a company is making money off the environment.³⁰⁰ Rather than engage in a futile effort to reform human nature, a more realistic approach is to try to channel natural human desires to particular objectives. Most of the incentives discussed in this Article rely on financial mechanisms to encourage wetland restoration, and mitigation banking is simply a variation on that theme. Rather than the government (*i.e.*, taxpayers) paying for the environmental improvements, the government creates a system where permittees pay others (entrepreneurial bankers) for the restoration work

295. See Florida Wetlandsbank, *Ecological Successes*, at <http://www.wetlandsbank.com/floridawetlandsbank/restorationsuccess.shtml> (last visited Nov. 10, 2002).

296. Robin Benedick, *Nature's Saving Account: Developers Put Cash Into State's First Wetlands Bank*, SUN-SENTINEL (Fort Lauderdale, FL), May 7, 1999, at 1B (reporting that the city received \$3.5 million in licensing fees and that an additional \$500,000 was set aside in a trust fund for maintenance of the site).

297. *Id.*

298. See Federal Guidelines for the Establishment, Use, and Operation of Mitigation Banks, 60 Fed. Reg. 58,605, 58,607 (Nov. 28, 1995); NRC, COMPENSATING FOR WETLAND LOSSES, *supra* note 7, at 9.

299. See Federal Guidelines for the Establishment, Use, and Operation of Mitigation Banks, 60 Fed. Reg. 58,606.

300. See Gardner, *supra* note 10, at 529-33; NAWCC(C), MITIGATION AND COMPENSATION, *supra* note 10, at 21-22 (noting that "perception of buy-out or sell-out with respect to compensation policies and strategies is highly volatile and contentious" and that some view mitigation banking as "dangerous" and could result in "fundraising by governments and NGOs").

they have done. Such an approach is also entirely consistent with the polluter-pays principle.³⁰¹

Mitigation banking is not for all jurisdictions.³⁰² Indeed, even in the United States, although the number of mitigation banks is increasing, they are not the primary method of providing wetland mitigation in the Clean Water Act section 404 program.³⁰³ For a mitigation banking system to thrive, a regulatory system that imposes mitigation conditions must already be in place. Mitigation banking exists in an odd market: the government controls both the supply and demand side of the equation. The government creates a demand for mitigation credits by imposing mitigation conditions on permitted activities. It also regulates the supply side because its agencies authorize and oversee the construction and operation of private mitigation banks. The purchase of a mitigation credit, without government approval, is worthless to the permittee. Changes relating to the demand for or supply of mitigation credits can greatly affect the incentive for an entrepreneur to restore wetlands.³⁰⁴

V. CONCLUDING OBSERVATIONS

Although every incentive measure will not be appropriate for all jurisdictions, some common themes emerge that have broad applicability. Of course, as a starting point, every incentive measure must provide some reward, usually tangible and economically valuable, to individuals or entities that engage in restoration efforts. Beyond that, however, a successful incentive program will typically have a public education or public participation component, clear restoration goals or performance standards, and a monitoring or enforcement mechanism to ensure that the standards are met.

301. See United Nations Conference on Environmental Development, *Rio Declaration on Environment and Development*, 31 I.L.M. 874, 879 (June 14, 1992) (Principle 16).

302. Some commentators have suggested, however, that mitigation banking has utility outside of the United States. See Stephen Crooks & Laure Ledoux, *Mitigation Banking as a Tool for Strategic Coastal Zone Management* (CSERGE Working Paper GEC 99-02) (contending that mitigation banking may be an appropriate tool in the UK coastal zone).

303. NRC, COMPENSATING FOR WETLAND LOSSES, *supra* note 7, at 82-83. From 1992 to 2002, however, approved mitigation banks in the United States rose from forty-six to two hundred nineteen. ELI, BANKS AND FEES, *supra* note 247, at 35.

304. Demand for mitigation credit is reduced when the government exempts wetland areas or activities from regulation. See, e.g., *Solid Waste Agency v. U.S. Army Corps of Eng'rs*, 531 U.S. 159, 174 (2001) (limiting federal jurisdiction over isolated wetlands). The government also affects the supply side when it allows permittees other options to satisfy mitigation requirements, such as in-lieu-fee arrangements and even accepting cash donations itself. See Gardner, *supra* note 204, at 38-51 (discussing environmental, ethical, and fiscal problems associated with fee mitigation).

Public education is important to maintain general support for wetland restoration efforts and to spur participation in specific projects. International agreements, such as the Ramsar Convention and the Convention on Biological Diversity, establish frameworks to help inform governments and their people about the functions and values of wetlands. In addition, the success of a restoration program will frequently depend on the participation of those who use wetlands and who may be responsible for wetland losses. Thus, it is important to consider the motivation of these wetland users — whether farmers in the mid-west United States or fishermen in the Philippines — when tailoring a program that will satisfy their needs. An effective program will convey to them why it is in their personal, collective, or corporate interest to participate in a restoration project.

Still, the educational component is only the first, although necessary, step. A program should be structured to ensure the likelihood that once an individual or entity agrees to undertake a wetland restoration project, the project results in the expected environmental gains. As a number of programs, such as the U.S. Clean Water Act program, have demonstrated, a critical component is identifying with specificity what is expected of the participant. A lack of performance standards will lead to a lack of performance.

Moreover, incentive programs must balance the carrot with the stick. A government or some interested party must monitor the progress of restoration efforts, as is done in the European Union's LIFE-Nature program, to work with the participant to modify the project if problems develop or to terminate support if appropriate. Knowledge that the project is subject to follow-up inspections will encourage a project participant to comply with its obligations.

Finally, the restored site must be protected from future threats. There is no point in restoring a wetland if it will likely be destroyed or degraded. Legal instruments, such as a conservation easement or the designation of the site as a protected area (*e.g.*, a NATURA 2000 site) can reduce development pressure. Local stakeholders, as the fishermen in the Philippines have illustrated, can also be enlisted to help protect the restored sites from illegal activities. Ideally, a wetland program will combine incentives to restore with incentives to protect and conserve for the long term.